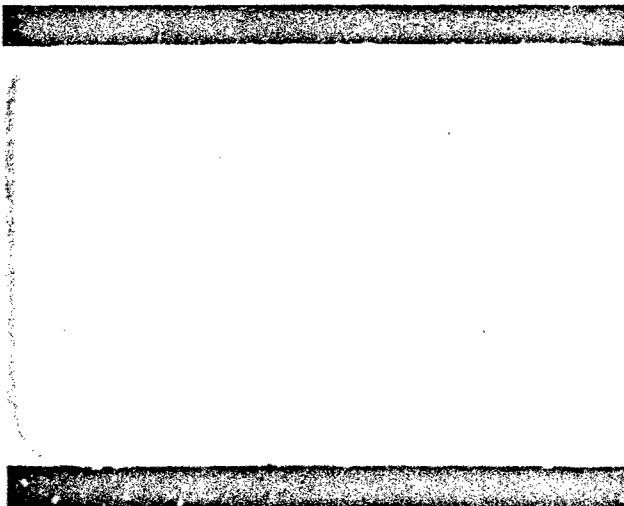


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**GENERAL DYNAMICS**  
*Convair Division*

CSF



A2136-1 REV. 5-65

(1)

AIRFRAMES  
AIRBORNE  
DIFFICULTIES REVIEW

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GENERAL DYNAMICS  
Convair Division

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SAMS0 TR-76-181

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Issue Date: 15 August 1966

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DIFFICULTIES REVIEW ATLAS BOOSTER  
AIRBORNE AND GROUND SUPPORT SYSTEMS.

BOOK II.

GENERAL INFORMATION,

Volume I.

Airframes Airborne Difficulties Review.

12 97p.

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Approved by

*B. B. Shaffer*  
B. B. Shaffer

Chief of reliability Engineering

147650

BOOK II - DIFFICULTIES REVIEW - AIRBORNE CONTAINS THE FOLLOWING VOLUMES

VOLUME I	AIRFRAMES
*VOLUME II	ABORT SENSING AND IMPLEMENTATION SYSTEM
VOLUME III	AUTOPILOT
*VOLUME IV	AUXILIARY POWER SOURCE
VOLUME V	ELECTRICAL
*VOLUME VI	GUIDANCE
VOLUME VII	HYDRAULICS
VOLUME VIII	INSTRUMENTATION
VOLUME IX	PNEUMATICS
VOLUME X	PROPELLANT UTILIZATION
VOLUME XI	PROPULSION INTERFACE
VOLUME XII	PROPULSION
VOLUME XIII	RANGE SAFETY COMMAND

\*VOLUMES II, IV AND VI UNDER ONE COVER.

## GENERAL INFORMATION

The Difficulties Review encompasses problems gathered from the factory, the field, (ETR and WTR) and UTP. The factory difficulties are limited to "selloff" and rerun composite testing.

In the UTP area, the difficulties were excerpted from Central Test Control Reports, Problem Reports, Supplementary History Sheets and Problem Review Reports.

Field problems for the Difficulties Review have been limited to captive flights, flight readiness firings, actual countdown dual propellant loading quad tanking, component reliability testing, and flight acceptance composite tests. Difficulties called out in the search for critical weakness program was not documented.

GSE problems shall be limited to ETR Complex 12, 13, 36A and 36B for the present edition. Hereafter only booster difficulties shall be maintained.

Failure analysis reports cover difficulties from the field and factory and may complement the information above.

The GSE Difficulties Review, Book 1 contains 14 Volumes, one volume for each system, under one cover. Each volume is appropriately indexed.

The Airborne Difficulties Review, Book 2 contains 13 volumes. Each volume is under separate cover except Volumes II, IV and VI. Volumes II, IV, and VI are under one cover because of the limited material contained in each volume. All volumes are appropriately indexed.

A guide to facilitate interpretation of data in the Difficulties Review (GSE and Airborne) is part of each book or volume.

# DIFFICULTIES REVIEW AIRFRAME - AIRBORNE

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## GENERAL DYNAMICS

Convair Division

Subject: Explanatory Information For Use of Difficulties Review (DR)  
Data Tab Runs

This information has been prepared to facilitate use of the DR. It is not intended to describe how the DR was prepared nor the scope of the existing effort.

The Difficulties Review (DR) is presented on a form compatible with automated data processing and printout.

Appearing at the top of the page (outside of blocked-in areas) is the identification of the system and whether it is Airborne or Ground Support Equipment. Appearing with this identification is the date of the document and the page number.

On the right hand side outside of the blocked area, appears the abstract number. An abstract number is assigned to each item of the Difficulty Review to facilitate traceability to the original input document.

Appearing under the major identification are blocks wherein the information on component or system difficulty is identified and explained. Attached are samples of pages coded for reference to the following definitions and explanations:

### CODE

### EXPLANATION

①

This group of blocks callout system, subsystem, test/report number, failed component name, difficulty (Dif) data source, and GDC part number if applicable. Also called out here is the vehicle number, if applicable, and the date of difficulty.

In the same row, the site location, and in case of a flight, captive flight, or countdown, the time will be entered.

The block containing PRI and OTH refer to whether or not the failure is primary or a secondary failure. A secondary failure is to be interpreted as caused by another discrepancy.

The last block in this row is obvious and requires no further explanation:

②

Refers to a major system of the launch vehicle.

③

Refers to subsystem of a major vehicle system if applicable, (Booster, sustainer, etc).

## GENERAL DYNAMICS

Convair Division

<u>CODE</u>	<u>EXPLANATION</u>
(4)	Is a report number as opposed to type of report, (UTP, Countdown, Flight, FAR, etc.).
(5)	Is a type of report, such as a FAR, UTP, FRF, etc.
(6)	Refers to a component part by name.
(7)	Is a component piece part of the component and referred to by name, (plug, seal, wiring, diode, etc., only where applicable).
(8)	Is a GDC part number, if applicable.
(9)	Refers to a site or location at time of discrepancy on the component or vehicle system.
(10)	Is the vehicle on which discrepancy occurred. Vehicle number listed only if unit was installed on a vehicle at time of discrepancy.
(11)	Is the vendor part number, if applicable.
(12)	Is the vendor name, if applicable.
(13)	Is the failure caused by other component or other system. This item defines the failure as secondary or not secondary.
(14)	<p>Refers to the primary failure. If item is labeled <u>no</u>, then item (13) may appear as a <u>yes</u>.</p> <p>Should item (13) appear as a <u>yes</u>, then an abstract will have been written to identify the cause of failure effecting the component referred to in the Difficulty Review, Item 6. It should be noted that a multiple failure may be recorded in these blocks, (yes/yes), or if a failure did not occur, (no/no).</p>
(15)	<p>Defines the failure mode, and if identifiable, the cause is called out. A careful review of the failure mode is made to determine effect on system operation and vehicle effort.</p>

## GENERAL DYNAMICS

Convair Division

<u>CODE</u>	<u>EXPLANATION</u>
(16)	Defines the system effect. This effect is the result of the failure mode assigned to the component.
(17)	Defines the vehicle effect. This effect is a result of the failure mode and the result of the system effect.  It should be noted that corrective action may be taken whether or not the failure was confirmed.
(18)	Lists the corrective action. Taken by GDC, the vendor, or both.

GENERAL DYNAMICS  
CONVAIR DIVISION

PAGE 0171

17 FEB 1966

DIFFICULTIES REVIEW-HYDRAULIC SYSTEM-AIRBORNE

SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIP DATA SOURCE PART NUMBER	VEHICLE DATE DIP	SITE TIME DIP	PRI VENDOR NAME	OTH VENDOR PART NO
----------------------	---	--------------------------------	---------------------	------------------	--------------------	-----------------------

CORRECTIVE ACTION-CEPT 141-3 TO PERFORM RETEST ON TWO (2) ADDITIONAL UNITS FROM LOT 13, TO DETERMINE LOT ACCEPTABLE  
117 AND PROVIDE COMPARISON DATE.

HYDRAULIC-A/B BOOSTER 27A3977 HYDRAULIC PUMP UTP-PRT 27-08388-1 841289 CONVAIR YES VICKERS NO AA-80894-R-2A 887091

FAILURE MODE-OUT OF SPECIFICATION, 3/4 408-0430, PEAK TRANSIENT PRESSURES WERE 4100 TO 4800 PSIG, ALLOWABLE IS 4000  
PSIG. NO FLOW TO FULL FLOW TIME IS 0.137 SECONDS, ALLOWABLE TIME IS 0.08 SECONDS.

CORRECTIVE ACTION-SIGHT ECP PASS TO REVISE TEST REQUIREMENTS TO PRACTICAL LEVELS.

HYDRAULIC-A/B BOOSTER 8LV-A9-10-26P HYDRAULIC PUMP/SEAL FAR 27-08388-1 7128 FACTORY YES VICKERS NO AA-80894-R-2A 888174

FAILURE MODE-LEAK-EXTERNAL-CONTINUOUS OIL SEEPAGE WAS OBSERVED DURING CHECKOUT, CAUSED BY DEFECTIVE SEAL AT PUMP  
INLET PRESSURE SENSING PORT.

CORRECTIVE ACTION-VENDOR REVIEWED STOCK OF O-RINGS AND INFORMED THEIR PERSONNEL OF CORRECT SEAL INSTALLATION PROCEDURE.

HYDRAULIC-A/B BOOSTER 8LV-92-10-239-F BOOSTER HYDRAULIC PUMP/SEAL FAR 27-08388-1 0071-01 MTR YES AA-80894-R-2A 889489

FAILURE MODE-LEAK EXTERNAL. PUMP WAS REPORTED LEAKING AFTER HOT FIRING TEST. CASE WAS OVERPRESSURIZED CAUSING DAMAGE  
TO CASE COVER SEAL.

CORRECTIVE ACTION-NO CORRECTIVE ACTION RECOMMENDED SINCE DAMAGE OCCURRED DUE TO INADVERTENT OVERPRESSURIZATION OF  
PUMP.

HYDRAULIC-A/B BOOSTER 8PA1810-3 HYDRAULIC PUMP UTP-PRT 27-08388-1 840514 CONVAIR YES VICKERS NO AA-80894-R-2A

FAILURE MODE-LEAK EXTERNAL, 3/4 208-0888 FAILED TO MEET CASE DRAIN LEAKAGE REQUIREMENTS OF 8.8 GPM DURING PRT-1AT.  
THIS UNIT ALSO FAILED TO MEET PEAK TRANSIENT PRESSURE REQUIREMENTS. REFER TO PPR-4261.

SYSTEM EFFECT-NONE.

IV

GENERAL DYNAMICS  
CONVAIR DIVISION

15 JUL 1966

PAGE 0002

DIFFICULTIES REVIEW-HYDRAULIC SYSTEM-AIRBORNE

SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIP DATA SOURCE PART NUMBER	VEHICLE DATE DIP	SITE TIME DIP	PRI VENDOR NAME	OTH VENDOR PART NO
CORRECTIVE ACTION-BOOSTER HYDRAULIC FILL AND BLEED PERFORMED.						
HYDRAULIC-A/B BOOSTER	PTA8867/P8-WO-01-04C8	COMPOSITE-PRD/DPL	1310 830713	308 NO	NO	NO
FAILURE MODE-FAIL TO OPERATE AT PRESCRIBED TIME. TEST WAS RUN WITHOUT BOOSTER HYDRAULICS BECAUSE BOOSTER MPU COULD NOT BE OPERATED REMOTELY. THIS WAS NOTED DURING AUTOPILOT FINAL CHECKS.						
SYSTEM EFFECT-OPERATION DOES NOT START.						
VEHICLE EFFECT-NONE.						
CORRECTIVE ACTION-BOOSTER MPU HAND VALVE, MICROSWITCHES VS AND VI ADJUSTED TO MAKE WIPER CONTACT.						
HYDRAULIC-A/B BOOSTER	60C/84783-048/01-401-00-39	FLIGHT	390 830701	B-1 -32.9	YES NO	NO
FAILURE MODE-LEAK. 01 HYDRAULIC ACCUMULATOR PRESSURE EXHIBITED NO PRESSURE DIFFERENCE DURING THE OIL EVACUATION SEC UENCE.						
SYSTEM EFFECT-POSSIBLE CONTAMINATION. ALTHOUGH THE FAILURE MODE INDICATES THE POSSIBILITY OF AIR IN THE BOOSTER HYDRAULIC SYSTEM, SYSTEM PERFORMANCE WAS SATISFACTORY.						
VEHICLE EFFECT-NONE.						
CORRECTIVE ACTION-NONE. THE POSSIBILITY OF CONTAMINATION WAS NOT CONFIRMED BY ANY OTHER TELEMETRY DATA.						
HYDRAULIC-A/B BOOSTER	90C/84783-039/88-401-00-177	FLIGHT	1770 830803	B-2 8.3	NO NO	NO
FAILURE MODE-OUT OF TOLERANCE. BOOSTER HYD ACCUM. PRESS MEASUR. H33P AND HYD. PUMP OUTLET PRESS. MEASUR H33P INDICAT ED AN INITIAL NORMAL PRESS. RISE BUT TO A LOWER (3150 PSIA) THAN NORMAL (3300 PSIA) PEAK AT 8.3 SEC. THE PRESS. THEN DECATED TO 8750 PSIA DURING NEXT 1.3 SEC. SPECIFIC CAUSE UNKNOWN BUT SYMPTOMATIC OF UNUSUALLY HEAVY DEMAND ON STATE M.						
SYSTEM EFFECT-OPERATION TOO LOW. BOOSTER HYDRAULIC PRESS. LOWER THAN NORMAL FOR A TIME PERIOD OF -8.3 SEC TO 1.3 SE C. NO ADVERSE EFFECT NOTED ON SYSTEM PERFORMANCE.						
VEHICLE EFFECT-NONE.						
CORRECTIVE ACTION-NONE.						
HYDRAULIC-A/B BOOSTER	50/C22M63-015-041047-L4-TMO-01-71	COMPOSITE-PRD/DPL	7107 830418	B-4 NO	YES NO	NO

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GENERAL DYNAMICS  
CONVAIR DIVISION

15 JUN 1966

DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIF DATA SOURCE PART NUMBER	VEHICLE DATE DIF	SITE TIME DIF	PRI OTH	VENDOR NAME VENDOR PART NO	
AIRFRAME-A/B	60A63-0874/B1-401-00-84	FLIGHT	94D 830911	B-1 4	YES NO		000493
FAILURE MODE-STRUCTURAL. SMALL FALLING OBJECT OBSERVED ON FLIGHT FILMS AT ABOUT 4 SECONDS. OBJECT NOT IDENTIFIED.							
SYSTEM EFFECT-NONE.							
VEHICLE EFFECT-NONE.							
CORRECTIVE ACTION-NONE.							
AIRFRAME-A/B	60A63-0476/C1-503-00-60	FLIGHT	99E 880703	576C 7	YES NO		000433
FAILURE MODE-STRUCTURAL. SMALL FALLING OBJECT OBSERVED ON FILM AT 7 SECONDS. OBJECT NOT IDENTIFIED.							
SYSTEM EFFECT-NONE.							
VEHICLE EFFECT-NONE.							
CORRECTIVE ACTION-NONE.							
AIRFRAME-A/B	EM-1880 ATLAS VEHICLE	FLIGHT	52F 630323	576E 91	YES NO		000649
FAILURE MODE-STRUCTURAL-SELF-DESTRUCTED AT 91 SECONDS CAUSE UNKNOWN.							
SYSTEM EFFECT-EXPLOSION.							
VEHICLE EFFECT-LOSS OF VEHICLE INTEGRITY AND SELF-DESTRUCTION.							
CORRECTIVE ACTION-NONE-CAUSE OF FAILURE NOT IDENTIFIED. THIS WAS A SAC LAUNCH AND 60/C DID NOT PERFORM A POST FLIGHT ANALYSIS.							
AIRFRAME-A/B	A0J63-0031/A1-402-00-184	FLIGHT	1880 630228	A-3 48.3	NO NO		003499
FAILURE MODE-OUT OF EXPECTED TEST VALUE. PRONOUNCED SHOCK WAS EVIDENCED ON THE ROLL RATE SYNO AND AXIAL ACCELERATION TRACES AT 48.6 SECONDS. THE APPROXIMATE TIME OF MACH 1.							
SYSTEM EFFECT-NONE.							
VEHICLE EFFECT-NONE.							
CORRECTIVE ACTION-NONE.							

GENERAL DYNAMICS  
CONVAIR DIVISION

# DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIP DATA SOURCE PART NUMBER	VEHICLE DATE DIP	SITE TIME DIP	PRI OTH	VENDOR NAME VENDOR PART NO
AIRFRAME-A/B	WSE-40/A3-402-00-176	FLIGHT	176 830131	A3 47.1	NO NO	
FAILURE MODE-OUT OF EXPECTED TEST VALUE. PROFOUND SHOCK WAS EVIDENCED ON THE ROLL RATE GYRO AND AXIAL ACCELERATIO N TRACES AT 47.1 SECONDS, THE APPROXIMATE TIME OF MACH 1.						
SYSTEM EFFECT-NONE.						
VEHICLE EFFECT-NONE.						
CORRECTIVE ACTION-NONE.						
AIRFRAME-A/B	AE62-0421/P6-403-00-F1	FLIGHT	104D 820508	36A 54.82	NO YES	
FAILURE MODE-STRUCTURAL. ATLAS SELF DESTRUCTION OCCURRED AS A RESULT OF UPPER STAGE SELF DESTRUCTION.						
SYSTEM EFFECT-LOSS OF STRUCTURAL INTEGRITY.						
VEHICLE EFFECT-LOSS OF VEHICLE INTEGRITY. VEHICLE SELF DESTRUCTED FOLLOWING THE RUPTURE OF THE LOX TANK.						
CORRECTIVE ACTION-NONE TO ATLAS.						
AIRFRAME-A/B BOOSTER BOOSTER SECTION	60C/BAF63-034 FORWARD MACELLE DOORS	COUNTDOWN 69-78211-1 69-78211-2	7107 89D428	2-4 NO	NO NO	
FAILURE MODE-OUT OF TOLERANCE. THE QUAD 1 AND 111 AND THE QUAD 11 AND 1V FORWARD MACELLE DOORS HAD BEEN INSTALLED I N THE WRONG QUADRANTS						
SYSTEM EFFECT-NONE. DOORS INSTALLED SUITABLE FOR FLIGHT. DOORS ARE INTERCHANGEABLE AND ARE IDENTIFIED ONLY AFTER HAR TINGS ARE PAINTED ON DURING MANUFACTURING.						
VEHICLE EFFECT-NONE.						
CORRECTIVE ACTION-MACELLE DOORS WILL BE QUADRANT IDENTIFIED AFTER FTY CHECK.						
AIRFRAME-A/B BOOSTER SECTION	60C/BAF63-070/401-00-83	FLIGHT	7114 840119	2-4 200	NO NO	
FAILURE MODE-OUT OF EXPECTED TEST VALUE. ENGINE COMPARTMENT TEMPERATURES INDICATED WARMER THAN AVERAGE THERMAL ENVI RONMENT AFTER BASE PRESSURE REVERSAL. MAXIMUM TEMP OF 844 DEG F WAS RECORDED AT 104 SECONDS IN THE QUAD 2 AREA BY P1 37.						
SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT.						
VEHICLE EFFECT-NONE. ALL MISSION OBJECTIVES WERE SATISFIED.						



GENERAL DYNAMICS  
CONVAIR DIVISION

15 JUN 1966

DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIP DATA SOURCE PART NUMBER	VEHICLE DATE DIP	SITE TIME DIP	PRI OTN	VENDOR NAME VENDOR PART NO	
CORRECTIVE ACTION-NONE. WARMER THAN AVERAGE TEMPERATURES NOT CONSIDERED A PROBLEM.							890386
AIRFRAME-A/B BOOSTER SECTION	CT-98-02-038 FUEL MANIFOLD SUPPORT	FAR 7-23432-803	174D 951208	36N	YES NO	60/C	890484
FAILURE MODE-STRUCTURAL. FIELD REPORTED 3/4 CRACK IN SUPPORT ASSEMBLY DURING ROUTINE INSPECTION OF THRUST SECTION.							
CORRECTIVE ACTION-FAILURE CONFIRMED. FAILURE WAS DUE TO STRESS CORROSION OF 7075 T6 ALUMINUM ALLOY ROD END FITTING. SURVEY WAS ORIGINATED BY 60/C TO INSPECT FOR CRACKS IN MANIFOLD SUPPORT STRUTS. 60/C RECOMMENDED DESIGN CHANGE TO INCLUDE A LOCKWUT ON ROD END BEARING TO PREVENT FORCING THE ROD END BEARING SHANK INTO THE THREADS IN THE ROD FITTING OR CHANGE HEAT TREAT OF ROD FITTING SO IT IS LESS SUSCEPTIBLE TO STRESS CORROSION.							
AIRFRAME-A/B BOOSTER SECTION	AC-80-0048/32-513-AT-02 SUSTAINER THRUST CHAMBER BOOT	CAPTIVE 27-77011-1	2C 951113	52	YES NO	60/C	890544
FAILURE MODE-STRUCTURAL. POST TEST INSPECTION REVEALED A TORN CAN LOC FLAP IN QUAD I AND II.							
SYSTEM EFFECT-NONE. NO EVIDENCE OF HOT ENGINE COMPARTMENT. THE MAXIMUM TEMPERATURE RECORDED WAS 80 DEGREES F.							
VEHICLE EFFECT-NONE							
CORRECTIVE ACTION-IR 236004 WAS WRITTEN AGAINST THE SUSTAINER BOOT.							
AIRFRAME-A/B BOOSTER SECTION	89-0071-13 STAGING LATCH BOLTS.	COMPOSITE-PRD/DPL 7-45435	7113 951102	2-4	YES NO		890579
FAILURE MODE-OUT OF TOLERANCE. 8 BOLTS WERE UNDERTORQUED.							
SYSTEM EFFECT-NONE.							
VEHICLE EFFECT-NONE.							
CORRECTIVE ACTION-THE SIX BOLTS WERE RE-TORQUED.							
AIRFRAME-A/B BOOSTER SECTION	60C/BR85/A2-801-00-147	FLIGHT	147F 950803	A2 73	YES NO		
FAILURE MODE-OUT OF TOLERANCE. HIGH ENGINE COMPARTMENT THERMAL ENVIRONMENT WAS INDICATED BY ATAST AT THE SUSTAINER INSTRUMENTATION PANEL. THE TEMPERATURE STARTED TO RISE AT 75 SECONDS AND REACHED THE UPPER BAND LIMIT OF 700 DEGREES F AT 118 SECONDS.							
SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT. BASED ON HEAT FLUX COMPUTATIONS FROM PREVIOUS FLIGHT'S, IT WAS DETERMINE D THAT THE HEAT FLUX INPUT DURING THIS FLIGHT WAS NOT DETRIMENTAL TO ENGINE COMPONENTS OR ELECTRICAL CONNECTIONS.							

READ CAREFULLY

GENERAL DYNAMICS  
CONVAIR DIVISION

18 JUN 1966

DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIF DATA SOURCE PART NUMBER	VEHICLE DATE DIF	SITE TIME DIF	PRI OTH	VENDOR NAME VENDOR PART NO
VEHICLE EFFECT-NONE.						
CORRECTIVE ACTION-NONE.						
AIRFRAME-A/B BOOSTER SECTION	GOC/BK65-038/LA-701-00-7106 MACELLE DOOR	FLIGHT	7106 850327 0	2-4 0	YES NO	
FAILURE MODE-FAILED TO OPERATE AT PRESCRIBED TIME. FILM COVERAGE OF LIFT-OFF INDICATED QUAD 1-1V DOORS BOUNCED AND WERE NOT COMPLETELY CLOSED. THIS CONDITION WAS PROBABLY CAUSED BY 1) LATCH FAILURE, 2) INTERFERENCE FROM A FOREIGN OBJECT, 3) DOOR CLOSURE SPRINGS BROKE OR CAME LOOSE DURING CLOSING, 4) LOWER FLANGE THAT DOOR BEARS AGAINST WAS BENT OUTWARD.						
SYSTEM EFFECT-NONE. THE DATA DID NOT INDICATE ANY EVIDENCE OF ANY HIGH THRUST SECTION TEMP OR ANY COMPONENT IN FLIGHT MALFUNCTIONS.						
VEHICLE EFFECT-NONE						
CORRECTIVE ACTION-1) CLOSER INSPECTION OF ALL FACETS OF THE DOOR INSTALLATION 2) TO PREVENT BENDING OF THE FLANGE DURING MAINTENANCE, A WORK PLATFORM WILL BE CONSTRUCTED WHICH DOES NOT COME IN CONTACT WITH THE FLANGE AS IT DID IN THE PAST.						
AIRFRAME-A/B BOOSTER SECTION	GOC/BK65-038/LA-701-00-7106 FLIGHT	7106 850327 09	2-4 09	YES NO		
FAILURE MODE-OUT OF EXPECTED TEST VALUE. WHEN BASE REVERSAL OCCURRED FIVE TEMPERATURE MEASUREMENTS INCREASED IN THE ENGINE. BY 101 SECONDS, MAXIMUM TEMPERATURE WAS 274 F LOCATED IN THE SUSTAINER ENGINE FUEL PUMP AREA.						
SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT. CALCULATIONS FROM CALORIMETER DATA OF HEAT TRANSFER FOR VEHICLE 7103, WHICH HAD EXHIBITED THE GREATEST HEAT INPUT (GREATER THAN 100 F) YIELDED A TOTAL HEAT FLUX OF 35.9 BTU/IN. TEMP ON 7106 WAS 274 F, THEREFORE THE HEAT TRANSFER WAS LESS THAN 35.9 BTU WHICH IS INSUFFICIENT TO CAUSE ANY STRUCTURAL DAMAGE.						
VEHICLE EFFECT-NONE.						
CORRECTIVE ACTION-NONE.						
AIRFRAME-A/B BOOSTER SECTION	SLV-98-02-0377 MACELLE RIVETS	FAR 7-79212	3301 930318	ETR YES	YES YES	YES YES
FAILURE MODE-STRUCTURAL- RIVET HEADS CAME OFF MACELLE (FOUR AT MISSILE WIFE DOWN, FIFTY NINE DURING 100 PCT SURVEY TAPTEST) DUE TO STRESS CORROSION INTER- GRANULAR CRACKING. ANALYSIS REVEALED EXCESSIVE DEFORMATION AND BENDING OF THE ADS. CONTRIBUTING CAUSES- INCORRECT MISSILE HANDLING AND IMPROPER DRIVING TECHNIQUES.						
CORRECTIVE ACTION-1. ON NEW FABRICATION ECP 3444 REPLACED ALL 3036 RIVETS ATTACHING FIBERGLASS IN THE ENGINE MACELLE						

GENERAL DYNAMICS  
CONVAIR DIVISION

19 JUN 1968

DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIF DATA SOURCE PART NUMBER	VEHICLE DATE DIF	SITE TIME DIF	PRI OTH	VENDOR NAME VENDOR PART NO
E AND THRUST BARREL WITH LOCK BOLTS. 2. FABRICATED DOORSTAY WILL BE 50 PCT RIVET TAP TESTED AT THE SITES. FAILED RIVETS WILL BE REPLACED WITH BOLTS BY ECP. 3. PAR 3LV-98-02-3829 OF 4/9/65 DOCUMENTS CORRECTIVE ACTION RECOMMENDATIONS.						
999751						
AIRFRAME-A/B BOOSTER SECTION	3LV-90-02-058F LATCH-B1 POD DOOR	FAR 69-72128-1	7104 430317	WTR	YES NO	CAMLOCK NO 51L46-1AA
FAILURE MODE-STRUCTURAL-LATCH BROKE HALF LOOSE FROM ITS BRACKET WHILE CLOSING POD DOOR. ONE PIVOT RIVET PULLED LOOSE AND WAS LOST. CAUSE OF FAILURE IS ATTRIBUTED TO MARGINAL DESIGN. PROBLEM IS AGGRAVATED BY DOORS BEING CUMBERSOME, UNWIELDY, DIFFICULT TO LATCH WITHOUT APPLYING EXCESSIVE FORCE TO LATCHES, LOCKED AND UNLOCKED NUMEROUS TIMES PRIOR TO SITE DELIVERY. SEE FAR 3LV-90-02-058F FOR SIMILAR PROBLEM.						
CORRECTIVE ACTION-CONFIRMED. (1.) CIC 30022 REVISED 69-72105 RIGGING INSTRUCTIONS TO ASSURE OF REDUCED LATCH LOADING PRIOR TO LOCKWIRING FOR MISSILES 60-1600-1 AND ON. (2.) AVO OF 7/13/65 STATES THAT IF RIGGING INSTRUCTIONS FAIL TO PREVENT LATCH FRACTURES THEN OTHER MEANS WILL BE USED. (3.) THIS ACTION SAME AS FOR FAR 3LV-90-02-058F.						
999849						
AIRFRAME-A/B BOOSTER SECTION	60C/BKF65-015/L3-TD2-00-7104 FLIGHT	7104 650312	2-3 69	YES NO		
FAILURE MODE-OUT OF EXPECTED TEST VALUE. A RISE IN ALL THRUST SECTION AMBIENT TEMPERATURE INSTRUMENTATION WAS NOTED AFTER THE MINIMAL TIME OF BASE PRESSURE REVERSAL. AT 45ST, SUSTAINER FUEL PUMP INLET, STARTED RISING AT 69 SECONDS. A NO WENT OFF THE INSTRUMENTATION UPPER BAND EDGE OF 550 F AT 91 SECONDS.						
SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT-THE TOTAL HEAT FLUX INTO THE THRUST SECTION (128TU/ FOOT SQUARED) WAS NOT GREAT ENOUGH TO CAUSE ANY THRUST SECTION COMPONENT DAMAGE.						
VEHICLE EFFECT-NONE.						
CORRECTIVE ACTION-DO/C HAS PROPOSED (1) TCF 8449 TO INVESTIGATE RADIATION BODY STRENGTH OF MATERIALS, AND (2) ADDITIONAL PRE-LAUNCH PHOTOGRAPHIC COVERAGE OF BOOT INSTALLATIONS TO ASSIST IN POST-FLIGHT ANALYSIS.						
999310						
AIRFRAME-A/B BOOSTER SECTION	3LV-90-02-058F B1 POD DOOR LATCH RIVET	FAR 60-72128-1	7104 650302	WTR	YES NO	CAMLOCK NO 51L45-1AA
FAILURE MODE-STRUCTURAL-LATCH BROKE LOOSE FROM ITS BRACKET WHILE CLOSING POD DOOR. PIVOT RIVETS PULLED OUT AND WERE LOST AT TIME OF FAILURE. IT WAS SUBMITTED THAT PIVOT RIVET FAILED FROM REPEATED ACTUATION CAUSING THE LOW CARBON RIVET TO GALL, POSSIBLY BEING NOTCHED BY THE MATING HOLE IN THE BRACKET. DESIGN TOLERANCE SLOP CONTRIBUTED TO FAILURE.						
CORRECTIVE ACTION-CONFIRMED-1. CIC 30022 REVISED 69-72105 RIGGING INSTRUCTIONS TO ASSURE OF REDUCED LATCH LOADING PRIOR TO LOCKWIRING FOR MISSILES 60-1600-1 AND ON. 2. AVO OF 7/13/65 STATES THAT IF REVISION OF RIGGING INSTRUCTIONS FAILS TO PREVENT LATCH FRACTURES THEN OTHER MEANS WILL BE USED. LATCH REPAIRED.						
999310						
999310						

GENERAL DYNAMICS  
CONVAIR DIVISION

# DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIF DATA SOURCE PART NUMBER	VEHICLE DATE DIF	SITE TIME DIF/OTH	PRI VENOCA PART NO
AIRFRAME-A/V BOOSTER SECTION	SD/3: AP263-001/ CORRECTIVE ACTION-NONE.	FLIGHT	106F 090106	3766 77	YES NO
FAILURE MODE-OUT OF TOLERANCE CONNECTING AT APPROXIMATELY BASE PRESSURE REVERSAL ENGINE COMPARTMENT TEMPERATURES AT ARTED TO RISE. FIVE THERMOCOUPLES INDICATED TEMPERATURES IN EXCESS OF 1000 DEGREES FAHRENHEIT. SYSTEM EFFECT-ENGINE COMPARTMENT COMPONENTS WERE SUBJECTED TO A HIGH TEMPERATURE ENVIRONMENT. VEHICLE EFFECT-NONE.					
AIRFRAME-A/B BOOSTER SECTION	WDA-AP263-002/E1-801-00-111 CORRECTIVE ACTION-BOOSTS WERE IMPROVED AND THRUST SECTION SEALING WAS IMPROVED.	FLIGHT	111F 041222	E/WIR 76	YES NO
FAILURE MODE-OUT OF EXPECTED TEST VALVE. HIGH ENGINE COMPARTMENT TEMPERATURES WERE RECORDED IN THE QUAD 1 AREA. PEA K TEMPERATURES ABOVE 1004 DEGREES F OCCURRED AT 76 SEC. A SECOND TEMPERATURE RISE BEGAN AT 79 SECONDS IN THE QUAD 1, 2, AND 3 AREAS. THE THIRD RISE STARTED AT 92 SECONDS MAINLY IN QUAD 1-4 THE LAST RISE STARTED AT 110 SECONDS IN QUAD D 2-3 SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT. VEHICLE EFFECT-NONE.					
AIRFRAME-A/3 BOOSTER SECTION	GOA-AP264-042/01-801-00-36 CORRECTIVE ACTION-NO CORRECTIVE ACTION KNOWN. NO CAUSES HAVE BEEN ISOLATED. HOWEVER, THE HIGH TEMPERATURES SEEN TO B E ASSOCIATED WITH REVERSAL OF THE DIFFERENTIAL PRESSURE ACROSS THE HEAT SHIELD. CLOSURE OF THE ENGINE COMPARTMENT HE ATER DUCT DOOR WAS NOT VERIFIED. THE EFFECT OF THIS DOOR BEING OPEN IS NOT KNOWN.	FLIGHT	34F 040931	01 70	YES 60 FT V 1TH NO
FAILURE MODE-OUT OF EXPECTED TEST VALUE. TEMPERATURE MEASUREMENTS IN THE THRUST SECTION INDICATED TEMPERATURES IN E XCESS OF 500 DEGREES AT 100 SECONDS. SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT. VEHICLE EFFECT-NONE. CORRECTIVE ACTION-NONE.					
AIRFRAME-A/B BOOSTER SECTION	GOA/BRF64-048/L4-701-00-7103 CORRECTIVE ACTION-NONE.	FLIGHT	7103 040810	2-4 86	YES NO
FAILURE MODE-OUT OF EXPECTED TEST VALUE. A HIGH ENGINE COMPARTMENT THERMAL ENVIRONMENT IN EXCESS OF 900 DEG AT THE BOOSTER STATION IN QUAD 11/E11 (A8987) AND AT THE BOOSTER LUBE OIL TANK SUPPORT BRACKET AT STATION 1243 (A8147).					

GENERAL DYNAMICS  
CONVAIR DIVISION

15 JUN 1966

DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM	TEST/REPORT NUMBER	DIP DATA SOURCE	VEHICLE DATE	SITE TIME	PRI OTH	VENDOR NAME	VENDOR PART NO
310-SYSTEM	FAILED COMPONENT NAME	PART NUMBER	DATE	DIP	TIME		
<p>SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT. THERE WAS NO EVIDENCE OF ANY DAMAGE TO COMPONENTS AS A RESULT OF THE HIGH TEMPERATURE. THE RESULTING BTU WAS 35.5 WHICH IS BELOW THAT REQUIRED TO FILL ANY ELECTRICAL WIRING OR STRUCTURAL COMPONENTS.</p> <p>VEHICLE EFFECT-NONE.</p> <p>CORRECTIVE ACTION-1) ROTATE AIR CLAMP ON SUS. DUCT SO THAT RETAINING BOLT WILL NOT FRAY DUCT. 2) INSTRUMENTATION ADDED TO 3150 ON BOOSTER TURBINE EXHAUST BOOT. 3) INVESTIGATE BOOT MATERIAL AND SWITCHING.</p>							
AIRFRAME-A/B	SLV-90-02-010P	FAR	7102	WIRMS	YES	KINNILLNUMBER	099478
BOOSTER SECTION	LM2 VENT DUCT GASKET	27-76404-7	640727		NO		
<p>FAILURE MODE-EXTERNAL LFAR- LM2 LEAKED FROM A GASKET THAT WAS CUT BY THE PNEUMATIC SHIELD AT ASSEMBLY DUE TO DESIGN DEFICIENCY.</p> <p>CORRECTIVE ACTION-RAR SLV-90-02-3525 RECOMMENDS A DESIGN CHANGE OF THE VENT SYSTEM.</p>							
AIRFRAME-A/B	LV-99-05-277F	FAR	2890	FACTORY	YES	BMC	091781
BOOSTER SECTION	SEPARATION LATCH FITTING	7-45435-5	640519		NO	7-45435-5	
<p>FAILURE MODE-CONTAMINATION. AUDIBLE LEAK AT VENT HOLE WITH 100 PSI. END CAP TIGHTENING TORQUE WAS CONSIDERABLY BELOW REQUIRED VALUES. METALLIC CONTAMINATION WAS EVIDENT. MARKS AND SCRATCHES INDICATED THAT THE LATCH HAD BEEN ACTUATED DURING ITS HISTORY.</p> <p>CORRECTIVE ACTION-FAILURE NOT CONFIRMED. PER INTER-COMPANY LETTER DATED 640709, AT CHECKOUT AND FINAL ASSEMBLY A 100 PSI NITROGEN LEAK CHECK IS MADE. LATCHES ARE NOT ACTUATED HERE. FURTHER INVESTIGATION DID NOT REVEAL ANY AREA WHERE THESE LATCHES ARE ACTUATED. CIC 45781 DATED 640806 REDUCED THE REQUIRED END CAP TORQUE TO 50 PLUS OR MINUS 8 FOOT POUNDS. REF. RAR LV-99-06-3701.</p>							
AIRFRAME-A/B	SLV-90-02-032F	FAR	360	SYC	YES	INST-DEVEL.LAB	099476
BOOSTER SECTION	MISSILE SUPPORT SOCKET ASSEMBLY.	27-04500-1	640403		NO	11216	
<p>FAILURE MODE-STRUCTURAL- SOCKET SLEEVE WAS CRACKED WITH PARTS MISSING. SLEEVE ALIGNMENT DETENT MECHANISM PIN WAS PARTIALLY REMOVED AND DENT. THIS WAS ORIGINAL SOCKET ASSEMBLY ON 360 MISSILE HAD EXPERIENCED NUMEROUS HOT FIRINGS (CRA CR ORIGINALLY REPORTED IN 1962). VEHICLE THEN USED FOR BLV MOCKUP. AT RECYCLE, SOCKET WAS REPLACED. FAILURE ATTRIBUTED TO UNKNOWN DURING CAPTIVE TESTS.</p> <p>CORRECTIVE ACTION-NONE- VEHICLE IS NO LONGER SUPPLYING UNITS.</p>							

GENERAL DYNAMICS  
CONVAL'S DIVISION

15 JUN 1968

DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIF DATA SOURCE PART NUMBER	VEHICLE DATE DIF	SITE TIME DIF	PRI OTH	VENDOR NAME VENDOR PART NO
AIRFRAME-A/B BOOSTER SECTION	604-AP284-028/PL-801-00-137	FLIGHT	137F 640401	11 79SEC	NO YES	
<p>FAILURE MODE-OUT OF EXPECTED TEST VALVE. ABNORMAL TEMPERATURE ENVIRONMENT IN QUAD 11 AND 1V OF ENGINE COMPARTMENT.</p> <p>SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT. IN QUAD 11 A TEMP RISE BEGAN AT 79 AND REMAINED AT 1000 DEG. F. BETWEEN 105 AND 115 SEC. THEN DECREASED RAPIDLY TO 120 DEG F BY 120 SEC. IN QUAD 1V A TEMP DECREASE BEGINNING AT 50 SEC. REACHING -30 DEG F AT 75 SEC, THEN INCREASING TO 145 DEG F BY 95 SEC, THEN DECREASING TO -70 DEG F BY 85 SEC.</p> <p>VEHICLE EFFECT-NONE.</p> <p>CORRECTIVE ACTION-NONE. TEMPERATURE MEASUREMENTS INDICATING TEMP. VARIATIONS WERE OF HIGH RESPONSE TYPE AND THEREFORE VARIATIONS WERE NOT CONSIDERED A PROBLEM. NO FURTHER ACTION TAKEN.</p>						
AIRFRAME-A/B BOOSTER SECTION	LV-98-02-045F SUSTAINER RADIATION BODY ASSEMBLY	FAR 27-77005	295D 640325	ETR	YES NO	60/C GOC
<p>FAILURE MODE-STRUCTURAL. PRE-INSTALLATION INSPECTION REVEALED THAT THE TWO SPRING HOOPS WERE NOT ATTACHED TOGETHER. THE HOOP IS REQUIRED FOR ATTACHING BOOT AROUND THE CIRCUMFERENCE OF THE ENGINE. FAILURE DUE TO INCORRECT FABRICATION OF THE FULL LOOP OVER CENTER AND THE HALF LOOP OVER CENTER IN THE SAME PLACE AND NOT 90 DEGREES TO EACH OTHER. THE MINIMAL RESISTANCE TO UNCOUPLING FORCES ARE IMPOSED ON THE SPRING DURING HANDLING OR SHIPPING.</p> <p>CORRECTIVE ACTION-CONFIRMED (1) YEAR 6580-64. IN REPLY TO RAR LV-98-02-3826. STATED THAT VENDOR WOULD FABRICATE SPRING ENDS AT 90 DEGREES TO EACH OTHER. (2) CIC-07489-882-3-2 ADDED DETAIL L TO REVISION M OF 27-77005 SHOWING THAT A MAX GAP OF 0.008 INCH IS REQUIRED IN THE HALF LOOP OVER CENTER SPRING TERMINATION AFTER CONNECTION OF THE SPRING ENDS. AVO OF SEPT 15, 1964 DOCUMENTS SAME.</p>						
AIRFRAME-A/B BOOSTER SECTION	604/8KFE4-010/L3-401-00-286 DOORS	FLIGHT	296D 640311	PALC2-3 65	NO NO	
<p>FAILURE MODE-OUT OF EXPECTED TEST VALUE HIGH TEMPERATURES EXISTED IN THE VEHICLE THRUST CHAMBER. QUAD 1/2 HAD TEMPERATURES TO 308 DEG F AT 105 SECONDS, QUAD 1 AND QUAD 1/4 HAD PEAKS TO OVER 535 DEG F AT 105 SECONDS AND 120 SECONDS RESPECTIVELY. THESE HIGH TEMPERATURES WERE DETERMINED TO RESULT FROM HOT GASES DRAWN THROUGH A DEFECTIVE BOOT OR TRAP DOOR.</p> <p>SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT.</p> <p>VEHICLE EFFECT-NONE.</p> <p>CORRECTIVE ACTION-ADDITIONAL INSTRUMENTATION WAS INSTALLED ON FUTURE VEHICLES TO PROVIDE DATA NECESSARY TO DETERMINE BOOT ENVIRONMENT SO THAT EVALUATION OF BOOT ADEQUACY CAN BE PERFORMED.</p>						

GENERAL DYNAMICS  
CONVAIR DIVISION

# DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM		TEST/REPORT NUMBER	DIP DATA	VEHICLE	SITE	PRI	VEHICLE NAME
SUB-SYSTEM		FAILED COMPONENT NAME	PART NUMBER	DATE	TIME	OTH	VENDOR PART NO
AIRFRAME-A/B	BOOSTER SECTION	60/A-BNF64-006/L3-402-00-283	FLIGHT	2830	2-3	YES	
				640225	61.9	NO	
<p>FAILURE MODE-STRUCTURAL. AN OBJECT WAS SEEN ON FILM FALLING FROM THE BOOSTER TURBINE EXHAUST AREA. THIS OBJECT WAS POSSIBLY COAGULATED LUBE OIL OR UNBURNED PROPELLANT FROM THE TURBINE EXHAUST, OR COALESCING OF TURBINE EXHAUST GASES.</p> <p>SYSTEM EFFECT-NONE.</p> <p>VEHICLE EFFECT-NONE.</p> <p>CORRECTIVE ACTION-NO CORRECTIVE ACTION TAKEN.</p>							
AIRFRAME-A/B	BOOSTER SECTION	60/A-BNF64-006/L3-402-00-283	FLIGHT	2830	2-3/PALC	YES	
				640225	60	NO	
<p>FAILURE MODE-OUT OF TOLERANCE. THRUST SECTION TEMPERATURES DECREASED TO BAID LIMIT IN GUADS 2 AND GUAD 4. GUAD 4 MC NT TO-45 DEG. F AT 80 SECONDS AND GUAD 2 WENT TO -45 DEG. F AT 220 SECONDS. THIS IS ATTRIBUTED TO A LOX LEAK. PROBAB LY IN THE SUSTAINER HIGH PRESSURE FEED SYSTEM BETWEEN THE LOX PUMP AND INJECTOR. THE SUSTAINER FUEL PUMP DISCHARGE P RESSURE TRANSDUCER SENSE LINE FROZE.</p> <p>SYSTEM EFFECT-IDONE.</p> <p>CORRECTIVE ACTION-NO CORRECTIVE ACTION TAKEN- AS A DIRECT RESULT OF THIS FLIGHT, THE LEAK COULD NOT BE ISOLATED ADE QUATELY FOR CORRECTIVE ACTION. CD/C NOW RETORQUES ALL FITTINGS AND ENGINE BOLTS PRIOR TO FLIGHT AND HASCHANGED LOX ST ART TANK FLANGE FITTINGS TO SOLVE PROBLEM.</p>							
AIRFRAME-A/B	BOOSTER SECTION	LV-98-02-044F LN2 VENT GASKET	FAR 27-78404-7	2500 640123	ETRM-1	YES	KIRKILLRUBBER
					NO		
<p>FAILURE MODE-EXTERNAL LEAK-OVERBOARD DUCT GASKET WAS FOUND TO BE CUT DURING ROUTINE INSPECTION. GASKET WAS CUT BY T HE FIBERGLASS SHIELD 27-78402-1 DURING ASSEMBLY AT FACTORY.</p> <p>CORRECTIVE ACTION-LN2 TRANSFER PRESSURE WAS REDUCED, THUS PREVENTING LEAKAGE BY ALLOWING BOIL OFF.</p>							
AIRFRAME-A/B	BOOSTER SECTION	CT-98-02-029P FITTING SOCKET-BEARING. MISSILE BU 7-91100-7 PPORT	FAR 27-78404-7	1930 640121	ETRM	YES	
					NO		
<p>FAILURE MODE-OUT OF TOLERANCE. AN ANNULAR FLAT SPOT AT THE END OF THE SOCKET BORE PREVENTED SUFFICIENT TRAILER BALL ENGAGEMENT TO ALLOW LOCKING THE SOCKET. CAUSE WAS INADEQUATE MACHINING OF THE SOCKET BORE.</p>							

GENERAL DYNAMICS  
CONVAIR DIVISION

15 JUN 1966

DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIF DATA SOURCE PART NUMBER	VEHICLE DATE DIF	SITE TIME DIF	PRI OTH	VENDOR NAME VENDOR PART NO	
CORRECTIVE ACTION-CONFIRMED. PRODUCTION AND INSPECTION WERE NOTIFIED OF FAILURE CAUSE. IT WAS RECOMMENDED THAT INSP FACTORS USE A GO-NO-GO GAGE CORRESPONDING TO THE MAXIMUM BALL DIAMETER TO DETERMINE IF THE SOCKET CAN BE LOCKED.							089914
AIRFRAME-A/B BOOSTER SECTION	GOA-AP264-002 08-031-00-109	FLIGHT	105F 031E8	031F-2 74	YES NO		090601
FAILURE MODE-OUT OF TOLERANCE HIGH ENGINE COMPARTMENT TEMPERATURES WERE RECORDED DURING BOOSTER PHASE OF FLIGHT. A 124T, QUID A 3TA 1253, A1231, BETWEEN 31 AND 505T STA 1253, A126T, BETWEEN 82 AND 505T STA 1253, A127T, 02 STA 1253, A128T, AFT OF 505T LAGE 7A/M OVER 1010 DGF, OTHER TEMPS AS HIGH AS 020 DGF.							
SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT. NO ADVERSE SYSTEM PERFORMANCE WAS DETECTED AS A RESULT OF THE HIGH TEMP ERATURE ENVIRONMENT.							
VEHICLE EFFECT-NONE.							
CORRECTIVE ACTION-NONE-THE CAUSE AND NATURE OF THE HIGH TEMPERATURES HAVE NOT BEEN DETERMINED HOWEVER IT HAS BEEN N OTED THAT THE PISE IN TEMPERATURE OCCURRED AFTER BASE PRESSURE REVERSAL.							
AIRFRAME-A/B BOOSTER SECTION	SP-99-02-031F LONGERON, BRACKET ATTACH	FAR 27-70203-34	2500 031127	FACTORY	YES NO	CO, FT. WORTH 27-70203-34	093325
FAILURE MODE-STRUCTURAL. THE 7075-T6 EXTRUDED LONGERON WAS FOUND CRACKED IN AREA OF BRACKET ATTACH HOLES. THE ATTAC HING BRACKET WAS COMPLETELY FRACTURED. FAILURE WAS CAUSED BY TWO FACTORS-SINGLY OR JOINTLY- 1. FORCE FITTING OF LONG ERON AT INSTALLATION, 2. SHEAR LOADING BY BRACKET ATTACHMENT MULTIPLIED BY OSCILLATING FORCES ON THE BOOSTER DURING COMPOSITE TESTS.							
CORRECTIVE ACTION-1. CIC 50777 OF 27/3/63 CHANGED BRACKET MATERIAL FROM 7075-T6 TO 17-4 P4 STAINLESS STEEL. ATTACH HOLES WERE SLOTTED TO ILLUMINATE SLIGHT MISALIGNMENT AND VIBRATION STRESSES. 2. A FIXTURE (L.H. AND R.H) WAS MADE TO SUPPORT THE THRUST SECTION WHEN FAIRING IS REMOVED AND DURING COMPOSITE TESTS. 3. GD/A NOW MAKES IN-PLANT INSPECTION OF BRACKETS BEFORE AND AFTER COMPOSITE TESTS AND REQUIRING FORMAL DOCUMENTATION IN THE MISSILE RECORDS. THESE CHANG ES ARE DOCUMENTED IN REPLIES, DATED 18/2/63 AND 8/5/65 RO PAR SP-99-02-3606.							
AIRFRAME-A/B BOOSTER SECTION	GOA03-1237/PBA-LO-01-0A02 BOOTS	COMPOSITE-FRD/DPL	1280 031127	36A -7140	NO NO		091462
FAILURE MODE-OUT OF TOLERANCE. INSTALLATION OF ENGINE RADIATION BOOTS WAS NOT COMPLETED BY PRESCRIBED TIME. SCHEDULED PROBLEM.							
SYSTEM EFFECT-NONE. VEHICLE EFFECT-COUNTDOWN DELAYED. 90 MINUTE HOLD.							
VEHICLE EFFECT-COUNTDOWN DELAYED. 29 MINUTE HOLD.							
CORRECTIVE ACTION-HOLD TO COMPLETE BOOT INSTALLATION.							



GENERAL DYNAMICS  
CONVAIR DIVISION

15 JUN 1966

DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIF DATA SOURCE PART NUMBER	VEHICLE DATE DIF	SITE TIME DIF	PRI OTH	VENDOR NAME VENDOR PART NO	
AIRFRAME-A/B BOOSTER SECTION	LV-28-02-043C RADIATION BOOT ASSEMBLY	FAR 27-77006-803	283D 630925	ETR	NO NO		C99307
FAILURE MODE-CONTAMINATION-WHITE DEPOSITS FOUND IN MANY AREAS OF BOOT. THESE WHITE SPOTS WERE 10% LON EMULSION THAT HAD BEEN APPLIED TO BROKEN THREADS OR SMALL HOLES TO PREVENT FRATING OR UNRAVELLING OF THE REMAINDER OF THE CLOTH. THERE WERE TWO FAILURES ON THIS PART NUMBER.							
CORRECTIVE ACTION-NONE-PARTS NOT RECEIVED FOR ANALYSIS. PARTS WERE SENT TO MATERIAL REVIEW BOARD.							
AIRFRAME-A/B BOOSTER SECTION	60/A63-0883/C1-301-00-71	FLIGHT	71E 630925	C1 77	YES NO		093407
FAILURE MODE-OUT OF EXPECTED TEST VALUE. TEMPERATURE STARTED TO INCREASE AT 77 SECONDS AND PEAKED AT A TEMPERATURE OF 310 DEGREES F AT 122 SECONDS.							
SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT.							
VEHICLE EFFECT-NONE.							
CORRECTIVE ACTION-NONE.							
AIRFRAME-A/B BOOSTER SECTION	60A63-0874/D1-401-00-84	FLIGHT	84D 630911	B-1 96.6	YES NO		090862
FAILURE MODE-OUTSIDE EXPECTED TEMPERATURE RANGE-HIGH. ALTHOUGH ENGINE COMPARTMENT TEMPS NOT MONITORED ON THIS FLIGHT THE LOSS OF VERNIER ACCUMULATOR GAS CHARGE AT 96.6 SECS FITS OBSERVED PATTERN OF HOT ENGINE COMPARTMENT TEMPS. (42 D, 92D, 87D, 66E).							
SYSTEM EFFECT-HOT ENGINE COMPARTMENT ASSUMED, HOWEVER, THRUST SECTION WAS NOT INSTRUMENTED.							
VEHICLE EFFECT-LOSS OF VEHICLE STABILITY CAUSED BY VERNIER HYDRAULIC SYSTEM FAILURE. STABILITY LOST DURING VERNIER SOLO. VERNIER HYDRAULIC FAILURE CAUSED BY VERNIER ACCUMULATOR CHARGE LOSS DUE PROBABLY TO HOT ENGINE COMPARTMENT.							
CORRECTIVE ACTION-NONE ON D SERIES OPERATIONAL VEHICLES. ENGINE DOORS IMPROVED FOR SPACE PROGRAMS VEHICLES							
AIRFRAME-A/B BOOSTER SECTION	60A63-0709/D1-301-21	FLIGHT	21E 630726	F 79	YES NO		
FAILURE MODE-OUT OF EXPECTED TEST VALUE-A HIGH TEMPERATURE ENVIRONMENT WAS NOTED IN THE VICINITY OF THE SUSTAINER ENGINE 6/4D 1/2 SIDE. THE HIGH TEMPERATURE SOURCE WAS NOT DETERMINED.							
SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT-STARTING AT 79 SECONDS AN ABNORMAL TEMPERATURE RISE WAS NOTED IN THE ENGINE COMPARTMENT. 489 DEG F WAS RECORDED AT 119 SECONDS AT WHICH TIME A SLOW TEMPERATURE DECAY OCCURRED.							

GENERAL DYNAMICS  
CONVAIR DIVISION

15 JUN 1986

DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIF DATA SOURCE PART NUMBER	VEHICLE DATE DIF	SITE TIME DIF	PRI OTH	VENDOR NAME VENDOR PART NO	
VEHICLE EFFECT-NONE.							093529
CORRECTIVE ACTION-NONE.							090893
AIRFRAME-A/B BOOSTER SECTION	50/A63-0381/A3-401-00-198	FLIGHT	1980 630612	A-3 80-3	YES NO		
FAILURE MODE-OUT OF EXPECTED TEST VALUE. ENGINE COMPARTMENT TEMP MEASUREMENT F14T ON 811 LOX SOLO SUPPORT STRUT INDICATED A HIGHER THAN NORMAL INCREASE FROM 33 DEGREES F AT 80 SEC. TO A MAX OF 385 DEG. F. BY BECO.							
SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT IN ENGINE COMPARTMENT CAUSED NO ADVERSE SYSTEM OPERATION.							
VEHICLE EFFECT-NONE.							
CORRECTIVE ACTION-ENGINE DOOT AND FIRESHIELD MODIFICATIONS WERE MADE ON SUBSEQUENT VEHICLES.							
AIRFRAME-A/B BOOSTER SECTION	50/A63-0392/LB-401-00-139 HYDRAULIC RISE OFF DISCONNECT RADI 27-78306 ATION SHIELD	FLIGHT	1990 630612	1-2 0	YES NO		091206
FAILURE MODE-STRUCTURAL. LOSS OF SECOND AND THIRD SECTIONS OF THE RADIATION SHIELD DURING LIFTOFF SEQUENCE, WAS ATTRIBUTED TO EXPANSION OF THE OUTER TELESCOPING SECTION.							
SYSTEM EFFECT-NONE.							
VEHICLE EFFECT-LOSS OF VEHICLE INTEGRITY. FAILURE OF RADIATION SHIELD DURING LIFTOFF, ALLOWED RADIATION HEATING TO STRUCTURALLY WEAKEN AND EVENTUALLY RUPTURE THE HIGH PRESSURE BOOSTER HYDRAULIC DISCONNECT. FAILURE RESULTED IN VEHICLE DESTRUCTION AT 93.713 SECONDS.							
CORRECTIVE ACTION-CHECK VALVES AND HYDRAULIC RELEASE LADDER PRESSURE SWITCHES WERE INSTALLED IN THE BOOSTER AND SUBTAINER HIGH PRESSURE LINES UPSTREAM OF THE RISE OFF DISCONNECTS. IN ADDITION, THE RISE OFF DISCONNECT PANEL WAS REDESIGNED.							
AIRFRAME-A/B BOOSTER SECTION	50/A63-0383/01-501-00-02	FLIGHT	82C 630604	F-1 104	YES NO		090871
FAILURE MODE-OUT OF EXPECTED TEST VALUE. ABNORMALLY HIGH ENGINE COMPARTMENT TEMPERATURES WERE RECORDED NEAR THE SUBTAINER ENGINE DURING BOOSTER PHASE. MAXIMUM TEMPERATURE WAS 389 DEGREES F. AT 108 SECONDS, MEASURED IN THE VICINITY OF THE SUSTAINER HYDRAULIC PUMP.							
SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT-NO COMPONENT FAILURE OCCURRED AS A RESULT OF THE HIGH TEMPERATURE.							
VEHICLE EFFECT-NONE.							
CORRECTIVE ACTION-NONE.							

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CONVAIR DIVISION

13 JUN 1966

DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIF DATA SOURCE PART NUMBER	VEHICLE DATE DIF TIME DIF	SITE TIME DIF	PRI OTH	VENDOR NAME VENDOR PART NO
AIRFRAME-A/B BOOSTER SECTION	60/A83-0383/01-501-00-82	FLIGHT	62E 630804	F-1	YES NO	998860
FAILURE MODE-STRUCTURAL. THRUST SECTION VIBRATION MEASUREMENTS REFLECTED A SHORT BUILDUP OF VIBRATION ENERGY AT LIP TOFF. THE HIGHEST VALUE WAS 34 G(RMS) AT 850 CPS NEAR THE CHECK VALVE FUEL LINE. SYSTEM EFFECT-NONE. VEHICLE EFFECT-NONE. CORRECTIVE ACTION-NONE.						
AIRFRAME-A/B BOOSTER SECTION	60/A83-0383/01-501-00-82.	FLIGHT	62E 630804	F-1 14.31	YES NO	998856
FAILURE MODE-STRUCTURAL. TWO OBJECTS WERE OBSERVED TO FALL FROM THE MISSILE FROM BETWEEN THE VERNIER 1 ENGINE AND 9 UAD 4 MAIN LOX LINE. THE NATURE AND EXACT ORIGIN OF THE OBJECTS IS NOT KNOWN. SYSTEM EFFECT-NONE. VEHICLE EFFECT-NONE. CORRECTIVE ACTION-NONE.						
AIRFRAME-A/B BOOSTER SECTION	60/A83-0208/60/ALE-403-00-119	FLIGHT	119C 630308	1-2	NO NO	990437
FAILURE MODE-OUT OF TOLERANCE. HIGHER THAN NORMAL ENGINE COMPARTMENT THERMAL ENVIRONMENT WAS INDICATED DURING THE 8 BOOSTER PORTION OF FLIGHT STARTING AT APPROXIMATELY 70 SECONDS. THE MAXIMUM TEMPERATURE EXCEEDED THE UPPER 18W LIMIT OF 381 DEG. F. SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT. NO DETRIMENTAL EFFECTS DUE TO THE HIGH THERMAL ENVIRONMENT WERE APPARENT T. VEHICLE EFFECT-NONE. NO DETRIMENTAL VEHICLE EFFECTS DUE TO THE HIGH THERMAL ENVIRONMENT WERE APPARENT. CORRECTIVE ACTION-NONE. AS A DIRECT RESULT OF THIS FLIGHT, LATER ACTION CONSISTED OF REDESIGNED FIRESHIELD ATTACHME NTS, ENGINE ROOTS, AND CHANGES TO THE FIRESHIELD ATTACHMENTS AND OPENINGS TO PRECLUDE HOT GASES FROM ENTERING THE TH RUST SECTION.						
AIRFRAME-A/B BOOSTER SECTION	60/A83-0107/01-501-00-83 SHIELD	FLIGHT	62E 630484	OSTP-1 82-8	YES NO	998860
FAILURE MODE-STRUCTURAL-A 6W SECTION OF INCOMEL TORE LOOSE FROM THE HEAT SHIELD NEAR QUAD 1-2 RISE OFF DISCONNECT PANEL. ANOTHER TEAR OCCURRED IN THE QUAD 4 AREA. A 2W INCH SECTION WAS SEEN FALLING AND FOUND NEAR THE LAUNCH SITE. CAUSED BY THE LIFT OFF PRESSURE PULSE.						

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DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIP DATA SOURCE PART NUMBER	VEHICLE DATE DIP	911E TIME DIP	PRI OTH	VENOOR NAME VENOOR PART NO
SYSTEM EFFECT-NONE. VEHICLE EFFECT-NONE.						
CORRECTIVE ACTION-ADDITIONAL SECURING OF THE INCONEL TO THE FIRE SHIELD WAS INCORPORATED. SURVEYS PERFORMED TO ASSURE THAT 7/16 INCH WASHERS HAD NOT BEEN SUBSTITUTED FOR 7/8 INCH WASHERS AS INCONEL SECURING DEVICES.						
AIRFRAME-A/D BOOSTER SECTION	60/A63-0107/01-301-00-83	FLIGHT	93E 630424	0817-1 125	NO NO	
FAILURE MODE-FAIL DURING OPERATION. AMBIENT TEMPERATURE NEAR THE B1 GAS GENERATOR REACHED 270 DEGREES F IMMEDIATELY BEFORE STAGING. HEAT RADIATION FROM THE GAS GENERATOR IS BELIEVED TO BE THE CAUSE.						
SYSTEM EFFECT-NONE. VEHICLE EFFECT-NONE. CORRECTIVE ACTION-NONE.						
AIRFRAME-A/D BOOSTER SECTION	59-90-08-5128F TUBE ASSEMBLY-SEPARATION MEDIUM SU 27-45400-39 PPLY-B-NUT	FAR	118D 630419	1-2 PALC	YES NO	
FAILURE MODE-EXTERNAL LEAKAGE. B-NUT LEAKAGE. POSSIBLE STRESS RELAXATION. NUT WAS RETORQUED AND LEAK STOPPED. TWO DATED 630518 FROM VAFB CONFIRMED THAT TUBE ASSEMBLY WOULD NOT BE FORWARDED FOR ANALYSIS.						
CORRECTIVE ACTION-60/C IS CONDUCTING TESTS ON STRESS RELAXATION OF B-NUTS. APPROPRIATE PERSONNEL WERE INFORMED OF THE REJECTION AND REQUESTED TO PAY PARTICULAR ATTENTION TO TORQUING B-NUTS PER RAR 59-90-05-3546.						
AIRFRAME-A/D BOOSTER SECTION	AQ163-0034/02-601-00-83	FLIGHT	93F 630321	0817-2 34	YES NO	
FAILURE MODE-STRUCTURAL. TRACKING FILM DISCLOSED A REFLECTIVE ARTICLE FALLING FROM THE MISSILE AT APPROXIMATELY 34 SECONDS AFTER LIFTOFF. OBJECT THOUGHT TO BE ONE OF THE FOLLOWING, BE TURBINE SPINNER ACCESS DOOR, BE HYDRAULIC SERVING PANEL DOOR, OR A SECTION OF HEAT SHIELD INCONEL FACING.						
SYSTEM EFFECT-NONE. VEHICLE EFFECT-NONE. CORRECTIVE ACTION-NONE.						
FAILURE MODE-STRUCTURAL. TRACKING FILM DISCLOSED A REFLECTIVE ARTICLE FALLING FROM THE MISSILE AT APPROXIMATELY 34 SECONDS AFTER LIFTOFF. OBJECT THOUGHT TO BE ONE OF THE FOLLOWING, BE TURBINE SPINNER ACCESS DOOR, BE HYDRAULIC SERVING PANEL DOOR, OR A SECTION OF HEAT SHIELD INCONEL FACING.						
SYSTEM EFFECT-NONE. VEHICLE EFFECT-NONE. CORRECTIVE ACTION-NONE.						
FAILURE MODE-STRUCTURAL. TRACKING FILM DISCLOSED A REFLECTIVE ARTICLE FALLING FROM THE MISSILE AT APPROXIMATELY 34 SECONDS AFTER LIFTOFF. OBJECT THOUGHT TO BE ONE OF THE FOLLOWING, BE TURBINE SPINNER ACCESS DOOR, BE HYDRAULIC SERVING PANEL DOOR, OR A SECTION OF HEAT SHIELD INCONEL FACING.						
SYSTEM EFFECT-NONE. VEHICLE EFFECT-NONE. CORRECTIVE ACTION-NONE.						

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CONVAIR DIVISION

DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIF DATA SOURCE PART NUMBER	VEHICLE DATE DIF	SITE TIME DIF	PRI OTH	VENDOR NAME VENDOR PART NO
AIRFRAME-A/B BOOSTER SECTION	A0J83-0048/A1-401-00-193	FLIGHT	193D 830316	A-1 76.1	YES NO	090792
<p>FAILURE MODE-OUT OF EXPECTED TEST VALUE. QUAD 2 LOX SOLO TANK SUPPORT STRUT TEMPERATURE ROSE AT 76.1 SEC. TO MAXIMUM OF 326 DEGREES F AT 100.9 SEC. AT STAGING THE TEMPERATURE ROSE AGAIN TO OFF SCALE HIGH OF 346.2 DEGREES F AT 13.3 SEC. EXTRAPOLATION OF TEMPERATURE DATA INFERS A MAXIMUM AMBIENT TEMPERATURE OF OVER 400 DEGREES F FROM 76 SEC. UNTIL 90 SECS.</p> <p>SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT.</p> <p>VEHICLE EFFECT-LOSS OF VEHICLE STABILITY. THE HIGH TEMPERATURE RESULTED IN, 1. B2 PITCH FEEDBACK LOSS AT 103 SECS, 2. FLIGHT CONTROL YAW CONTROL LOSS AT 135 SECS, 3. SUSTAINER HYDRAULIC SYSTEM FAILED AT 149 SECS, 4. LINE IN HELIUM CONTROLS SYSTEM FAILED AT 156 SECS, AND 5. SUSTAINER AND VERNIER ENGINES SHUT DOWN AT 136 SECS.</p> <p>CORRECTIVE ACTION-STRENGTHENED THE BOOT FASTENINGS, MODIFIED THE BOOT STITCHING, AND REROUTED THE LOX START TANK ON ERBOARD VENT. ADDITIONAL INSTRUMENTATION WAS RECOMMENDED.</p>						
AIRFRAME-A/B BOOSTER SECTION	A0J83-0048/B1-401-00-48 HYDRAULIC RISE OFF DISCONNECT RADI ATION SHIELD	FLIGHT	460 830315	B-1 0	YES NO	590294
<p>FAILURE MODE-STRUCTURAL. LOSS OF RADIATION SHIELD DURING LIFTOFF SEQUENCE, ATTRIBUTED TO EXPANSION OF OUTER TELESCOPIPING SECTION.</p> <p>SYSTEM EFFECT-NONE.</p> <p>VEHICLE EFFECT-LOSS OF VEHICLE INTEGRITY. FAILURE OF RADIATION SHIELD DURING LIFTOFF, ALLOWED RADIATION HEATING TO STRUCTURALLY WEAKEN AND EVENTUALLY RUPTURE THE HIGH PRESSURE SUSTAINER HYDRAULIC DISCONNECT. FAILURE RESULTED IN LOSS OF VEHICLE STABILITY AFTER BOOSTER CUTOFF AS THE SUSTAINER AND VERNIER ENGINES HAD SHUTDOWN.</p> <p>CORRECTIVE ACTION-REDESIGN RISEOFF DISCONNECT PANEL TO PRECLUDE LOSS OF RADIATION SHIELDS. INTERIM REDESIGN MADE BY SBAMA CO/C REDESIGN INCORPORATED ON CHALK-TALK CONFIGURATION. NO ISOLATION CHECK VALVES INSTALLED ON AHS VEHICLES.</p>						
AIRFRAME-A/B BOOSTER SECTION	A0J83-0032/F1-801-00-134	FLIGHT	134F 830301	11 70	YES NO	090387
<p>FAILURE MODE-FAIL DURING OPERATION. THE TEMPERATURE AT THE AFT END OF THE SUSTAINER LUBE OIL TANK BEGAN TO INCREASE AT BASE PRESSURE REVERSAL AND PEAKED AT 188 DEGREES F AT 96 SECONDS.</p> <p>SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT.</p> <p>VEHICLE EFFECT-NONE. NO EFFECT ON AHS SYSTEM.</p> <p>CORRECTIVE ACTION-NONE</p>						

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DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIP DATA SOURCE PART NUMBER	VEHICLE DATE DIP	SITE TIME DIP	PRI OTH	VENDOR NAME VENDOR PART NO
AIRFRAME-A/B BOOSTER SECTION	AQ43-0031/A1-40R-00-106	FLIGHT	198D 630226	A-3 73	YES NO	092261
FAILURE MODE-OUT OF EXPECTED TEST VALUE. THE ENGINE COMPARTMENT AMBIENT TEMPERATURE MEASUREMENT, PILOT SHOWED A TEMP ERATURE INCREASE FROM 73 TO 100.5 SECONDS, AT WHICH TIME HIGH OF 201 DEG WAS REACHED.						
SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT.						
VEHICLE EFFECT-NONE.						
CORRECTIVE ACTION-NONE.						
AIRFRAME-A/B BOOSTER SECTION	AC-43-0004/32-807-B10-75 BOOSTS-B1 ENGINE	CAPTIVE 27-77013-3	75F 630206	82	YES NO	099101
FAILURE MODE-STRUCTURAL. POST TEST INSPECTION REVEALED A 3 INCH SEAM TEAR IN THE B1 BOOT.						
SYSTEM EFFECT-NONE						
VEHICLE EFFECT-NONE						
CORRECTIVE ACTION-BOOT REPAIRED.						
AIRFRAME-A/B BOOSTER SECTION	AQ43-0017/B2-401-00-39 BOOT	FLIGHT	39D 630123	B2 0.7	YES NO	091336
FAILURE MODE-STRUCTURAL. FIRE SHIELD TO SUSTAINER ENGINE BOOT CAME OFF BY 0.7 SECONDS. THE BOOT WAS FOUND AND IT AP PEARED THAT THE BOOT CABLE MAY HAVE BEEN IMPROPERLY TIGHTENED, RESULTING IN A CABLE FAILURE.						
SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT. LOSS OF THE BOOT CAUSED HIGH ENGINE COMPARTMENT TEMPERATURES.						
VEHICLE EFFECT-PREATURE PROPULSION SHUTDOWN. BOOSTER PERFORMANCE DECAY STARTED AT 78 SECONDS AND SUSTAINER OPERATI ON STOPPED AFTER 106 SECONDS. THE ENGINES SHUTDOWN BY 126 SECONDS.						
CORRECTIVE ACTION-UNKNOWN. LATER VEHICLES HAD A REDESIGNED METHOD OF BOOT ATTACHMENT TO THE FIRE SHIELD, ELIMINATIN G THE CABLE AT THE FIRE SHIELD.						
AIRFRAME-A/B BOOSTER SECTION	AQ43-0010/D1-502-00-64 B2 BOOT	FLIGHT	84E 621218	OSTP-1 0.	YES NO	
FAILURE MODE-STRUCTURAL. AS A RESULT OF STARTING PRESSURE PULSE, THE B2 ENGINE BOOT HIT AND DAMAGED THE LUBE OIL TA NK FILL AND DRAIN DISCONNECT FITTING.						
SYSTEM EFFECT-NONE.						
VEHICLE EFFECT-LOSS OF VEHICLE STABILITY FOLLOWED BY LOSS OF INTEGRITY AS A RESULT OF B2 ENGINE SHUTDOWN. B2 ENGINE						

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SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIF DATA SOURCE PART NUMBER	VEHICLE DATE DIF	SITE TIME DIF	PRI OTH	VENDOR NAME VENDOR PART NO
SHUTDOWN WHEN LOSS OF LUBE OIL FAILED A PINION GEAR IN TURBOPUMP.						
CORRECTIVE ACTION-METHOD OF ATTACHING BOOTS TO THE ENGINE WAS IMPROVED PRESSURE PULSE MAGNITUDE WAS REDUCED BY CHANGING ENGINE START CHARACTERISTICS.						
AIRFRAME-A/B BOOSTER SECTION	A0182-0047/LB-401-00-131 HYDRAULIC RISE OFF DISCONNECT RADI ATION SHIELD	FLIGHT 27-78308	1310 021217	1-2 0	YES NO	
FAILURE MODE-STRUCTURAL. LOSS OF RISE OFF HYDRAULIC DISCONNECT RADIATION SHIELD AT LIFTOFF WAS CONFIRMED FROM FILM DATA AND ATTRIBUTED TO EXPANSION OF THE OUTER TELESCOPING SECTION OF THE SHIELD.						
SYSTEM EFFECT-NONE.						
VEHICLE EFFECT-LOSS OF VEHICLE INTEGRITY. FAILURE OF RADIATION SHIELD AT LIFTOFF ALLOWED RADIATION HEATING TO STRUCTURALLY WEAKEN AND EVENTUALLY. RUPTURE THE HIGH PRESSURE BOOSTER HYDRAULIC DISCONNECT. FAILURE RESULTED IN VEHICLE D						
ESTRUCTION AT 80.52 SECONDS.						
CORRECTIVE ACTION-CHECK VALVES AND HYDRAULIC RELEASE LADDER PRESSURE SWITCHES WERE INSTALLED IN THE BOOSTER AND SUS						
TAINER HIGH PRESSURE LINES UPSTREAM OF THE RISE OFF DISCONNECTS. IN ADDITION, THE RISEOFF DISCONNECT PANEL WAS REDES						
IGNED.						
AIRFRAME-A/B BOOSTER SECTION	A0182-0107/A1-401-00-181	FLIGHT	1810 021818	A-3 78	YES NO	
FAILURE MODE-OUT OF EXPECTED VALUE. ENGINE COMPARTMENT TEMPERATURE MEASUREMENT, P147, INDICATED A TEMPERATURE INCREASE STARTING AT 78 SECONDS AND REACHING A MAXIMUM OF 240 DEG F AT 104 SECONDS.						
SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT.						
VEHICLE EFFECT-NONE. NO ADVERSE EFFECTS AS A RESULT OF THIS HIGH TEMPERATURE WERE NOTED ON ANY OF THE MISSILE SYSTEMS.						
CORRECTIVE ACTION-UNKNOWN. LATER CHANGE IN ENGINE BOOTS TO MORE POSITIVELY SEAL THRUST SECTION FROM ENGINE EXHAUST AREA.						
AIRFRAME-A/B BOOSTER SECTION	A0182-0114/P1-601-00-21 SUSTAINER BOOT	FLIGHT	21F 021203	11 72	YES NO	YES 60 CONVAIR
FAILURE MODE-FAIL DURING OPERATION. EVIDENCE FROM TEMPERATURE MEASUREMENTS INDICATES INFLUX OF HOT GASES AROUND SUSTAINER ENGINE BOOT POSSIBLE DAMAGE TO BOOT BY PRESSURE PULSE AT LIFTOFF.						
SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT. NO DETRIMENTAL EFFECTS OBSERVED. MEASUREMENT ASST. INDICATED 160 DEGREES F WHILE MEASUREMENTS ASST AND ASST (SUSTAINER LUBE OIL TANK) BOTH INDICATED MORE THAN 200 DEGREES F BETWEEN 70 AND 90 SECONDS. ASST RISE TO 200 PLUS BY SECO, ASST REMAINED OVER 200 AND ASST DROPPED TO 175 DEGREES F BY SECO.						
VEHICLE EFFECT-NONE.						

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**DIFFICULTIES REV:EW-AIRFRAME SYSTEM-AIRBORNE**

SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIP DATA SOURCE PART NUMBER	VEHICLE DATE DIP	SITE TIME DIP	PRI OTH	VENDOR NAME VENDOR PART NO
CORRECTIVE ACTION-NONE.						
AIRFRAME-A/B BOOSTER SECTION	SP-99-02-031F LONGERON	FAR 27-70223-34	250D 021127	FACTORY	YES	60/FORT WORTH NO
FAILURE MODE-STRUCTURAL-THE ALUMINUM EXTRUDED LONGERON AT QUAD 3 WAS CRACKED AND THE SUPPORT BRACKET BROKEN DURING FINAL CHECK-UP. CAUSE WAS FORCE FITTING OF LONGERON DURING INSTALLATION AND OR SHEAR LOADING BY BRACKET ATTACHMENT WHICH ULTIMATED IN OSCILLATING FORCES DUE TO LACK OF A BOOSTER SECTION SUPPORT DURING COMPOSITE TESTS.						
CORRECTIVE ACTION-REPLIES TO RAR SP-99-02-3804 RECEIVED 2/18/83 AND 5/8/83 DOCUMENTED THREE ACTIONS. 1. CIC 50777 DATED 3/27/83 CHANGED BRACKET MATERIAL TO 17-4 PH STAINLESS STEEL AND SLOTTED THE ATTACH HOLES TO ELIMINATE MISALIGNMENT AND VIBRATION. 2. R.M. AND L.M. FIXTURES WERE MADE TO SUPPORT THE THRUST SECTION WHEN FAIRING IS REMOVED AND DURING COMPOSITE TESTS. 3. O.C. REQUESTED AN IMPLANT INSPECTION OF BRACKETS BOTH BEFORE AND AFTER COMPOSITE TEST WITH DOCUMENTATION IN MISSILE RECORD.						
AIRFRAME-A/B BOOSTER SECTION	SP-99-02-030P LONGERON SUPPORT BRACKET	FAR 27-70223-7	250D 021127	FACTORY	YES	
FAILURE MODE-STRUCTURAL-THE ALUMINUM ALLOY BRACKETS WERE CRACKED FROM FATIGUE CAUSED BY SEVERE OSCILLATING APPLIED LOADS DURING FACTORY AUTOPILOT AND COMPOSITE TESTS WITH THE HORIZONTAL AND BOOSTER BOAT TAIL NOT SUPPORTED. THE 7075 ALLOY IS NOT STRONG ENOUGH IN THE SHORT TRANSVERSE GRAIN DIRECTION TO WITHSTAND THE POSSIBLE LOADINGS ENCOUNTERED DURING AUTOPILOT COMPOSITE TESTS.						
CORRECTIVE ACTION-REPLIES TO RAR SP-99-02-3804 RECEIVED 2/19/83 AND 5/8/83 DOCUMENTED THREE ACTIONS. 1. CIC 50777 DATED 3/27/83 CHANGED BRACKET MATERIAL TO 17-1PH STAINLESS STEEL AND SLOTTED ATTACH HOLES TO ELIMINATE MISALIGNMENT AND VIBRATION. 2. L.M. AND R.M. FIXTURES WERE MADE TO SUPPORT THE THRUST SECTION WHEN FAIRING IS REMOVED AND DURING COMPOSITE TESTS. 3. O.C. REQUESTED AN IMPLANT INSPECTION OF BRACKETS BOTH BEFORE AND AFTER COMPOSITE TESTS WITH DOCUMENTATION IN THE MISSILE RECORD.						
AIRFRAME-A/B BOOSTER SECTION	SP-99-02-030P LONGERON SUPPORT BRACKET	FAR 27-70223-3	250D 021127	FACTORY	YES	
FAILURE MODE-STRUCTURAL. CRACKED FROM FATIGUE DUE TO SEVERE OSCILLATING APPLIED LOADS DURING FACTORY AUTOPILOT AND COMPOSITE TESTS WITH MISSILE HORIZONTAL AND BOOSTER BOAT TAIL NOT SUPPORTED. THE 7075-T6 ALUMINUM ALLOY IS NOT STRONG ENOUGH IN THE SHORT TRANSVERSE GRAIN DIRECTION TO WITHSTAND POSSIBLE LOADINGS ENCOUNTERED DURING TESTS.						
CORRECTIVE ACTION-CIC 50777 DATED MARCH 27, 1983 CHANGED BRACKET MATERIAL TO 17-4 PH STAINLESS STEEL AND SLOTTED AT TACH HOLES TO ELIMINATE MISALIGNMENT AND VIBRATION STRESSES. A LEFT AND RIGHT FIXTURE FOR THRUST SECTION SUPPORT DURING FAIRING REMOVAL WAS MADE. GO/A TO INSPECT BRACKETS BEFORE AND AFTER COMPOSITE TESTS. FORMAL DOCUMENTATION IN MISSILE RECORDS IS REQUIRED. REFERENCE REPLIED TO RAR SP-99-02-3804 DATED FEB 10, 1983 AND MAY 6, 1983.						



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# DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIF DATA SOURCE PART NUMBER	VEHICLE DATE DIF	SITE TIME DIF OTH	PRI VENDOR PART NO
AIRFRAME-A/B BOOSTER SECTION	A-86-02-033F BOOSTER BOOT	FAR 27-77013-1	75F 621126	SYCAMORE YES GO/C NO	
FAILURE MODE-STRUCTURAL-BOOT ZIPPER MATERIAL EMBRITTLLED DURING A 3 SECOND HOT FIRING RUN. MATERIAL IS NOT COMPATIBLE WITH IN SERVICE TEMPERATURES. TESTS INDICATED MATERIAL COULD STAND LESS THAN 560 DEGREES, BUT EXPOSURES ARE IN EXCESS OF 1000 DEGREES F.					
CORRECTIVE ACTION-CONFIRMED. FAR A-86-02-3607 RECOMMENDED THAT THE COTTON DUCK MATERIAL USED IN THE ZIPPER BE REPLACED WITH A TEFLON CLOTH OR THAT THE PRESENT ZIPPER MATERIAL BE COATED WITH A TEFLON EMULSION. DESIGN GROUP REPLY TO FAR STATES THAT THIS FAILURE IS AN ISOLATED CASE WITH NO OTHERS OF THIS TYPE ON RECORD. ALSO THAT ZIPPERS ARE PROTECTED BY THE FIBER-GLASS CLOTH FLAP. MANY OF SUCH TESTS WERE REPEAT FIRINGS USING THE SAME BOOTS.					
AIRFRAME-A/B BOOSTER SECTION	A-86-02-032F SUSTAINER BOOT	FAR 27-77014-1	75F 621126	SYCAMORE YES GO/C NO	
FAILURE MODE-STRUCTURAL-THREAD STITCHING HAD COME LOOSE AND WAS BROKEN. THE BOOT WAS FOUND DAMAGED AFTER A 3 SECOND HOT FIRING RUN. THE THREAD WAS DAMAGED DURING STITCHING BECAUSE OF ITS MECHANICAL CHARACTERISTICS.					
CORRECTIVE ACTION-CONFIRMED. ECP8122 EFFECTIVE 1/30/82 AT OSTP-1 INCORPORATES THE REQUIREMENT OF COATING THE STITCHING THREAD WITH TEFLON. ON MISSILES 24E, 82E, 83E, 3F, 43F, 75F AND 65F.					
AIRFRAME-A/B BOOSTER SECTION	AJ62-0033/Q8-602-00-13	FLIGHT	13F 621114	6 18.4	NO YES
FAILURE MODE-OUT OF EXPECTED TEST VALUE. FOR REASONS UNKNOWN, A FIRE WAS OBSERVED AT 18.4 SECONDS, FOLLOWED BY AN EXPLOSION AT 19.64 SECONDS AS INDICATED ON UO1A AND YAW AND PITCH RATE.					
SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT. TEMPERATURES REMAINED NORMAL UNTIL 19.77 SECONDS WHEN AN ENGINE COMPARTMENT FIRE WAS INDICATED. MAXIMUM TEMPERATURE WAS 450 DEGREES F AT 34 SECONDS.					
VEHICLE EFFECT-PREATURE SUSTAINER ENGINE SHUTDOWN. THE FIRE AND EXPLOSION CAUSED DAMAGE TO THE PNEUMATICS SYSTEM WHICH IN TURN AFFECT SUSTAINER PERFORMANCE BY LACK OF PRESSURE TO THE LUBE OIL RESERVOIR.					
CORRECTIVE ACTION-UNKNOWN.					
AIRFRAME-A/B BOOSTER SECTION	AOL82-0031/LI-401-00-128	FLIGHT	128D 621115	PALCI-1 76	YES NO
FAILURE MODE-OUT OF EXPECTED TEST VALUE. HIGH ENGINE COMPARTMENT TEMPERATURES STARTING AT 76 SECONDS. MAXIMUM TEMPERATURE OF 279 DEG F RECORDED AT THE FIREX NOZZLE DOOR IN QUAD 1 (A1877) AT APPROXIMATELY 94.5 SECONDS.					
SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT.					

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DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIP DATA SOURCE PART NUMBER	VEHICLE DATE DIP	SITE TIME DIP	PRI OTH	VENDOR NAME VENDOR PART NO	
VEHICLE EFFECT-NONE. CORRECTIVE ACTION-NONE.							093498
AIRFRAME-A/B BOOSTER SECTION	AC-62-0040/32-804-87-78 HEATSHIELD	CAPTIVE	75P 621107 0	92 0	NO NO		090814
FAILURE MODE-STRUCTURAL-A MAJOR PRESSURE PULSE OCCURRED AT ENGINE START WHEN UTILIZING THE OBT-1 TYPE DRY FLAME BU CKET AND RESULTED IN DAMAGE TO THE HEAT SHIELD AND SUPPORT MEMBERS. SYSTEM EFFECT-LOSS OF STRUCTURAL INTEGRITY. VEHICLE EFFECT-NONE. CORRECTIVE ACTION-THE FIRE SHIELD WAS MODIFIED PER ECP 1942 AND 8098 WHICH REMOVED THE SHIELD TO WITHSTAND 5 PSI.							090800
AIRFRAME-A/B BOOSTER SECTION	AO-62-0070/41-401-00-139	FLIGHT	159D 621026 70	A-1 70	YES NO		090800
FAILURE MODE-OUT OF EXPECTED TEST VALUE. INSTRUMENTATION INDICATED ENGINE COMPARTMENT TEMPERATURES IN EXCESS OF 180 DEGREES F. MAXIMUM TEMPERATURE BY MEASUREMENT PLAT WAS 220 DEGREES F AT 117 SECONDS. THIS TEMPERATURE MEASUREMENT H AS HIGH TIME LAG SO THAT INDICATED TEMPS WERE PROBABLY LOWER THAN ACTUAL AT ANY GIVEN TIME AFTER 70 SECONDS. SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT. NO DETRIMENTAL EFFECTS OBSERVED. SPECIFIC AREA OF HOT GAS ENTRANCE TO E NGINE COMPARTMENT UNDETERMINED. VEHICLE EFFECT-NONE. CORRECTIVE ACTION-UNKNOWN.							090804
AIRFRAME-A/B BOOSTER SECTION	A-90-02-028 MACELLE DOOR SPRING	PAR 7-70243	215D 621017	ETR	YES FRANK MOLLISTE NO R		090804
FAILURE MODE-STRUCTURAL-FOUR SPRINGS WERE STRETCHED BEYOND THEIR PROPORTIONAL LIMIT AT ASSEMBLY APPARENTLY BECAUSE OF AN INADEQUATE ASSEMBLY METHOD IN THE FIELD. SPRINGS MUST BE STRETCHED 24.3 INCHES WHEN MACELLE DOORS ARE OPEN. BU T NO PORTION CAN BE HELD COMPRESSED BY THE ASSEMBLER'S HANDS. CORRECTIVE ACTION-CONFIRMED. PAR A-90-02-3603 REQUESTED THAT SPRING BE REPLACED WITH ONE HAVING AN AUXILIARY LOOP FOR ASSEMBLY AID. SLV MISSILES WILL USE A DOUBLE SPRING ARRANGEMENT WHICH CAN BE INSTALLED EASIER AND WITHOUT DETRIM ENTAL EFFECTS TO THE SPRING. EFFECTIVITY TO BE 11/2/63.							

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DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIP DATA SOURCE PART NUMBER	VEHICLE DATE DIP TIME	SITE DIP TIME	PRI OTH	VENDOR NAME VENDOR PART NO	
AIRFRAME-A/B BOOSTER SECTION	A-80-02-024C INSULATION BLANKET-HEAT SHIELD	FAR P7-78330	620819		YES NO	YES THOMPSON-FISER	693303
FAILURE MODE-STRUCTURAL-FOUR BLANKETS FOUND SATURATED WITH WATER. PARTS WERE NOT ANALYZED.							
CORRECTIVE ACTION-NONE-NO FAILURE ANALYSIS WAS PERFORMED. THE INSULATION BLANKETS WERE DRIED AND REINSTALLED. FAILURE ANALYSIS WAS CANCELLED.							
AIRFRAME-A/B BOOSTER SECTION	AQ162-0007/P1-601-00-7	FLIGHT	7F 020813	11 50	YES NO		691543
FAILURE MODE-OUT OF SPECIFICATION OR TOLERANCE. DURING THE AERODYNAMIC HEATING PERIOD (50 TO 80 SEC.) TEMPERATURES IN THE ENGINE COMPARTMENT REACHED AND EXCEEDED 200 DEG FAHRENHEIT, WHICH WAS THE CALIBRATION LIMIT. THE INSTRUMENTATION WAS MOUNTED NEAR THE SUSTAINER ENGINE.							
SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT.							
VEHICLE EFFECT-NONE.							
CORRECTIVE ACTION-NONE.							
AIRFRAME-A/B BOOSTER SECTION	A682-0750/82-404-00-87	FLIGHT	87D 620809	B-2	YES NO		693500
FAILURE MODE-OUT OF EXPECTED TEST VALUE. ALTHOUGH NO ENGINE COMPARTMENT TEMPERATURE MEASUREMENTS WERE INSTALLED DURING THIS FLIGHT, IT IS BELIEVED THAT EXCESSIVE TEMPERATURES PREVAILED DURING BOOSTER PHASE. THIS CONCLUSION WAS BASED ON A HYDRAULIC SYSTEM ANOMALY DURING THIS PERIOD AND SIMILAR DATA OBTAINED ON 480.							
SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT.							
VEHICLE EFFECT-IMPROPER TRAJECTORY. IT IS BELIEVED THAT THE HIGH TEMPERATURE ENVIRONMENT CAUSED A RUPTURE OF THE V8 A CHARGE LINE. AS A RESULT, NO HYDRAULIC PRESSURE WAS AVAILABLE DURING VERNIER SOLO PHASE, AND FINAL YAW CORRECTIONS WERE NOT EFFECTED.							
CORRECTIVE ACTION-NONE.							
AIRFRAME-A/B BOOSTER SECTION	A-99-02-018-P CATCH ASSEMBLY, MACELLE DOOR LATCH 7-78233-11	FAR	250D 620808		YES NO		
FAILURE MODE-STRUCTURAL-LATCH CATCH ENGAGEMENT SURFACES WERE FOUND CHIPPED. MATERIAL IN THE CATCH IS A STAINLESS STEEL CASTING WITH VERY LOW TOUGHNESS; THUS SUSCEPTIBLE TO BRITTLE FAILURE UNDER IMPACT LOADING.							

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# DIFFICULTIES REVIEW-AIRFRAME SYS-LEM-AIRBORNE

SYS- SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIF DATA SOURCE PART NUMBER	VEHICLE DATE DIF TIME	SITE DIF TIME	PRI OTH	VENDOR NAME VENDOR PART NO
CORRECTIVE ACTION-1. AS OF NOV 1, 1982, HEAT TREATING WAS REDUCED TO INCREASE TOUGHNESS OF MATERIAL. (TESTS RECYCLED 23 TIMES WITHOUT CHIPPING). 2. DATA MADE AVAILABLE FOR APPLICABLE OPERATIONAL TECHNICAL ORDERS.						
AIRFRAME-A/B BOOSTER SECTION	AE62-0780/E1-607-00-13	FLIGHT	15F 620801	576-E 115	YES NO	
FAILURE MODE-OUT OF EXPECTED TEST VALUE. ENGINE COMPARTMENT TEMPERATURE EXCEEDED 150 DEGREES F IN VICINITY OF SUSTA IHER HYDRAULIC PUMP AT 115 SECONDS.						
SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT. TEMPERATURE MEASUREMENT AT SUSTAINER HYDRAULIC PUMP IN EXCESS OF 150 DE GREES. ONLY OTHER MEASUREMENT, AT QUAD 1-11 INSTRUMENT PANEL, HAD PEAK VALUE OF 110 DEGREES F.						
VEHICLE EFFECT-NONE.						
CORRECTIVE ACTION-UNKNOWN.						
AIRFRAME-A/B BOOSTER SECTION	HG-99-02-017-F LATCH ASSEMBLY, NACELLE DOORS	FAR 27-70336-9	115D 620727		YES NO	
FAILURE MODE-STRUCTURAL-LATCH ENGAGEMENT SURFACES WERE FOUND CHIPPED. MATERIAL OF THE LATCH IS A 400 SERIES STAINLESS STEEL CASTING WITH LOW TOUGHNESS PROPERTIES SUSCEPTIBLE TO BRITTLE FAILURE WITH IMPACT LOADING.						
CORRECTIVE ACTION-(1.) AS OF NOV 1, 1982, THE HEAT TREATING WAS REDUCED TO INCREASE MATERIAL TOUGHNESS. (TESTS PRODUCED LATCHES RECYCLED 25 TIMES WITHOUT CHIPPING). (2.) THIS DATA NOT APPLICABLE FOR OPERATION TECHNICAL ORDERS.						
AIRFRAME-A/B BOOSTER SECTION	AE62-0702/L1-401-00-120 HEAT SHIELD-DOOR	FLIGHT	120D 620710	1-1 32	YES NO	
FAILURE MODE-LEAK EXTERNAL. A HOT GAS LEAK ORIGINATING AT THE HEATER DOOR ON THE LEFT HEAT SHIELD WAS INDICATED AT 3.2 SECONDS. LEAKAGE INCREASED AT 70 SECONDS AND HOT GAS WAS RELEASED INTO THE ENGINE COMPARTMENT AT 81 SECONDS. APPARENTLY LEAKAGE WAS DUE TO A VARYING WARPAGE OF THE HEATER DOOR COMPLIED WITH CHANGING DIFFERENTIAL PRESSURE CONDITIONS ACROSS THE HEAT SHIELD.						
SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT-RAPID TEMPERATURE RISES WERE NOTED ON PG71T AND PL4T AT 81 SECONDS AND CORRESPONDING INCREASES WERE NOTED ON THE HEATER DOOR AND FIREN DOOR THERMOCOUPLES AT APPROXIMATELY THE SAME TIME. MAXIMUM TEMPERATURE NOTED WAS 542 DEG F AT 90 SECONDS ON THE HEAT SHIELD HEATER DOOR.						
VEHICLE EFFECT-NONE.						
CORRECTIVE ACTION-UNKNOWN.						

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DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIP DATA SOURCE PART NUMBER	VEHICLE DATE DIP	SITE TIME DIP	PRI OTH	VENDOR NAME VENDOR PART NO	
AIRFRAME-A/B BOOSTER SECTION	AER-0892/01-501-00-67 HEATSHIELD	FLIGHT	87E 020713	F-1 -7.52	YES NO		094593
<p>FAILURE MODE-STRUCTURAL. THREE TEARS WERE SEEN IN THE HEATSHIELD OUTER FACING NEAREST THE SUSTAINER ENGINE. THE TEARS ARE ATTRIBUTED TO THE PRESSURE PULSE CREATED AT IGNITION OF THE BOOSTER ENGINES.</p> <p>SYSTEM EFFECT-NONE.</p> <p>VEHICLE EFFECT-NONE.</p> <p>CORRECTIVE ACTION-THE NUMBER OF FASTENING RIVETS IN THE HEATSHIELD HAVE BEEN INCREASED.</p>							
AIRFRAME-A/B BOOSTER SECTION	A-90-02-018-F LATCH ASSEMBLY-MACELLE DOOR	FAR 27-76336-9	124D 620620	WTR	YES NO		099502
<p>FAILURE MODE-STRUCTURAL-LATCH ENGAGEMENT SURFACES WERE FOUND CHIPPED. LATCH MATERIAL IS A 400 SERIES STAINLESS STEEL CASTING WITH LOW TOUGHNESS PROPERTIES SUSCEPTIBLE TO BRITTLE FAILURE WITH IMPACT LOADING. TWO TYPICAL FAILURES OCCURRED ON 6/20/62, ONE EACH ON 1200 AND 1100 AT WTR AND ONE OTHER OCCURRED ON 7/16/62 ON 131D AT THE FACTORY.</p> <p>CORRECTIVE ACTION-(1.) AS OF NOV 1, 1962, THE HEAT TREATING WAS REDUCED TO INCREASE MATERIAL TOUGHNESS. (TESTS PRODUCED LATCHES THAT WERE RECYCLED 25 TIMES WITHOUT CHIPPING). (2.) DATA WAS MADE AVAILABLE FOR APPLICABLE OPERATIONAL TECHNICAL ORDERS.</p>							
AIRFRAME-A/B BOOSTER SECTION	AC62-0421/P6-403-00-F1 MACELLE DOOR	FLIGHT	104D 620508	36A 0	YES NO		098093
<p>FAILURE MODE-FAIL TO OPERATE AT PRESCRIBED TIME. THE QUAD 4 MACELLE DOOR FAILED TO CLOSE COMPLETELY. THE REASON IS NOT KNOWN.</p> <p>SYSTEM EFFECT-OPERATION STOPS PREMATURELY.</p> <p>VEHICLE EFFECT-NONE.</p> <p>CORRECTIVE ACTION-UNKNOWN.</p>							
AIRFRAME-A/B BOOSTER SECTION	A661-1276/L1-401-00-118	FLIGHT	118D 620426	PALC-1 123	YES NO		
<p>FAILURE MODE-ABOVE EXPECTED VALUE. ABNORMALLY HIGH AMBIENT TEMPERATURE OF 310 DEGREES F WAS INDICATED IN ENGINE COMPARTMENT (P671T QUAD IV). DUE TO RESPONSE CHARACTERISTIC OF INSTRUMENTATION, THE TEMPERATURE WAS BELIEVED TO BE OVER 400 DEGREES F.</p> <p>SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT. HIGH TEMPERATURE WAS PRODUCED LOCALLY NEAR QUAD IV A FRAME NEAR THE FIREWHEEL FLAPPER DOORS.</p>							

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DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRDORNE

SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIF DATA SOURCE PART NUMBER	VEHICLE DATE DIF	SITE TIME DIF	PRI OTH	VENDOR NAME VENDOR PART NO	
VEHICLE EFFECT-NONE.							993683
CORRECTIVE ACTION-UNKNOWN.							
AIRFRAME-A/B BOOSTER SECTION	AE62-0076/01-504-00-66	FLIGHT	66E 620226	081F-1 130	NO NO		997682
FAILURE MODE-FAIL TO OPERATE AT PRESCRIBED TIME. THE BOOSTER SECTION DID NOT JETTISON DUE TO LOSS OF PNEUMATIC PRESSURE AS A RESULT OF THE THRUST SECTION FIRE.							
SYSTEM EFFECT-OPERATION DOES NOT START.							
VEHICLE EFFECT-IMPROPER TRAJECTORY.							
CORRECTIVE ACTION-NONE.							
AIRFRAME-A/B BOOSTER SECTION	AE62-0076/01-504-00-66	FLIGHT	66E 620226	081F-1 5	NO NO		999772
FAILURE MODE-FAIL DURING OPERATION. FIRE DETECTED AFTER LIFTOFF AT THE MISSILE BASE BETWEEN QUADRANTS 1 AND 11. THE VIEW OBTAINED CLEARLY ON CAMERA ITEM 1.12 ONLY. THE FIRE APPEARED FUEL RICH AND CENTERED IN THE AREA OF FUEL AND OIL RAIN LINE RISE-OFF DISCONNECT IN QUAD 1. THE FIRE WAS TURBULENT AND AT TIMES SPREAD TOWARD B1 AND B2 ENGINES. INTENSITY APPEARED TO DIMINISH GRADUALLY. FLAMES COULD BE OBSERVED UNTIL 40-70 SECS. OF FLIGHT.							
SYSTEM EFFECT-HIGH TEMP ENVIRONMENT-CAUSED FAILURE OF BOOSTER TO JETTISON DUE TO LOSS OF PNEUMATIC PRESSURE.							
VEHICLE EFFECT-LOSS OF VEHICLE INTEGRITY AND SUBSEQUENT SELF DESTRUCT AT APPROXIMATELY 295 SECS. THE FIRE RESULTED IN LOSS OF PNEUMATIC CONTROL PRESSURE WHICH IN TURN CAUSED VERNIER ENGINE SHUTDOWN AND FAILURE TO JETTISON THE BOOSTER SECTION.							
CORRECTIVE ACTION-NONE.							
AIRFRAME-A/B BOOSTER SECTION	AE62-0193/02-402-00-137 MACELLE DOOR, B1 QUAD 1	FLIGHT	137D 620216	B2 0	YES NO		993049
FAILURE MODE-FAIL DURING OPERATION. THE B1 SIDE MACELLE DOOR IN QUAD 1 REMAINED OPEN APPROXIMATELY 2 TO 3 INCHES. A S OBSERVED ON SEVERAL LAUNCH FILM ITEMS.							
SYSTEM EFFECT-NONE.							
VEHICLE EFFECT-NONE.							
CORRECTIVE ACTION-NONE.							

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DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIP DATA SOURCE PART NUMBER	VEHICLE DATE DIP	SITE TIME DIP	PRI OTH	VENDOR NAME VENDOR PART NO	
AIRFRAME-A/B BOOSTER SECTION	AE62-0075/B3-401-00-132 MACELLE DOOR, QUAD 3	FLIGHT	1320 620123	B-3 0.	YES NO	60C NO	898383
FAILURE MODE-FAIL TO OPERATE AT PRESCRIBED TIME. THE QUAD III MACELLE DOOR WAS NOT SEEN TO LEAVE THE FULLY OPEN POSITION DURING THE SHORT TIME IT WAS IN THE FIELD OF VIEW OF THE CAMERA (ABOUT 15 FEET OF RISK). DOOR COULD HAVE CLOSED LATER IN FLIGHT.							
SYSTEM EFFECT-NONE.							
VEHICLE EFFECT-NONE. NO EFFECT SUCH AS COMPONENT MALFUNCTION OR HIGH TEMPERATURES WERE INDICATED.							
CORRECTIVE ACTION-NONE.							
AIRFRAME-A/B BOOSTER SECTION	AE61-1275/L2-401-00-114 MACELLE DOOR	FLIGHT	1140 611222	1-2 0	YES NO	60 CONVAIR	898370
FAILURE MODE-FAILED TO OPERATE AT PRESCRIBED TIME. B1 (QUAD IV) MACELLE DOOR OBSERVED TO BOUNCE AND NOT CLOSE AS LONG AS VISIBLE ON TRACKING FILM. SIMILAR PROBLEM ON 1080.							
SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT. ALTHOUGH NO CORRELATION HAS BEEN ESTABLISHED BETWEEN OPEN MACELLE DOOR AND OBSERVED HIGH ENGINE COMPARTMENT TEMPERATURES, THIS REMAINS AS POSSIBLE CONTRIBUTORY CAUSE TO THE DISCREPANCY.							
VEHICLE EFFECT-NONE OBSERVED.							
CORRECTIVE ACTION-UNKNOWN.							
AIRFRAME-A/B BOOSTER SECTION	AE61-1275/L2-401-00-114 ENGINE COMPARTMENT	FLIGHT	1140 611222	1-2 75	YES NO	60 CONVAIR	898371
FAILURE MODE-OUT OF EXPECTED TEST VALUE. ENGINE COMPARTMENT TEMPERATURES INDICATED ABNORMAL RISES THROUGHOUT BOOSTER PHASE.							
SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT.							
VEHICLE EFFECT-NONE. NO DETRIMENTAL EFFECTS ON VEHICLE OR MISSION WERE INDICATED.							
CORRECTIVE ACTION-REVISION OF ENGINE COMPARTMENT INSTRUMENTATION TO OBTAIN BETTER DATA.							
AIRFRAME-A/B BOOSTER SECTION	AE61-1106/B2-403-00-53 MACELLE DOOR QUAD 1	FLIGHT	530 611129	82 0	YES NO		
FAILURE MODE-OUT OF TOLERANCE. FILM DATA INDICATED AN APPARENT BINDING CONDITION AT THE FORWARD END OF THE QUAD I MACELLE DOOR WHICH ALLOWED THE DOOR TO REMAIN OPEN APPROXIMATELY 3 INCHES AT LIFTOFF.							
SYSTEM EFFECT-NONE.							

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DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIP DATA SOURCE PART NUMBER	VEHICLE DATE DIP	TIME DIP	PRI OTH	VENDOR NAME VENDOR PART NO	
VEHICLE EFFECT-NONE.							007290
CORRECTIVE ACTION-REDESIGN OF THE DOOR LATCHING SYSTEM.							
AIRFRAME-A/B BOOSTER SECTION	99-02-014 LONGERON SUPPORT BRACKET, STA 1225 7-70223-7	FAR	113D 011110	ETR	YES NO	CONVAIR-FORTWO RTH	009297
FAILURE MODE-STRUCTURAL-BRACKET BROKEN DUE TO FATIGUE. TRANSPORTATION VIBRATION APPARENTLY CAUSED THE FATIGUE AND A N ANALYSIS INDICATED THAT THE ALUMINUM MATERIAL WAS LOW IN MAGNESIUM CONTENT.							
CORRECTIVE ACTION-(1.) EXAMINED ALL INSTALLED BRACKETS FOR CRACKS AND BREAKS. (2.) ESTABLISHED BETTER CONTROL OF V2 AT TREAT FACILITIES. (3.) ESTABLISHED BETTER CONTROL REGARDING TRACING STOCK USED. (4.) CHANGED BRACKET MATERIAL TO STAINLESS STEEL. (5.) SLOTTED ATTACH HOLES TO ELIMINATE STRESSES. (6.) FIXTURES MADE AVAILABLE DURING FAIRING REMOVAL AND COMPOSITE TESTS. (7.) BRACKET INSPECTION BEFORE AND AFTER COMPOSITE TESTS.							
AIRFRAME-A/B BOOSTER SECTION	AE61-0794/L2-402-00-103	FLIGHT	103D 011021	1-2 02	YES YES		003303
FAILURE MODE-OUT OF EXPECTED TEST VALVE-ENGINE COMPARTMENT TEMPERATURE INSTRUMENTATION INDICATED AN ABNORMAL TEMPERATURE RISE BEGINNING AT APPROXIMATELY 82 SECONDS. THE HOTTEST TEMPERATURE WAS RECORDED BY AT40T AT THE FUEL STAGING VALVE INDICATING 448 DEGREES F AT 116.8 SECONDS. THE ENGINE COMPARTMENT WAS SUBJECTED TO A HIGH TEMPERATURE ENVIRONMENT AT THE APPROXIMATE TIME OF BASE PRESSURE REVERSAL WHICH PROBABLY RESULTED IN THE INDUCTION OF HOT AIR FROM THE AFT SURFACE OF THE HEAT SHIELD INTO THE ENGINE COMPARTMENT.							
SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT.							
VEHICLE EFFECT-NONE.							
CORRECTIVE ACTION-ULTIMATE ACTION IS UNKNOWN. IMMEDIATE ACTION INCLUDED INCREASING THE TENSION OF THE SPRINGS THAT HOLD THE FIREX AND HEATER DUCT DOORS CLOSED AND INSTALLING A NEW TYPE OF ENGINE DOOR LATCH.							
AIRFRAME-A/B BOOSTER SECTION	AE61-0797/P3-801-00-80	FLIGHT	20E 010908	13 100	YES NO		007591
FAILURE MODE-OUT OF EXPECTED TEST VALVE. MEASUREMENT ASSET STARTED RISING AT 77 SECONDS FROM 104 DEGREES F TO 172 DEGREES F AT 115 SECONDS. WHEN IT LEVELED OFF. CAUSE OF TEMPERATURE RISE IS UNKNOWN.							
SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT.							
VEHICLE EFFECT-NONE.							
CORRECTIVE ACTION-NONE.							



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DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIP DATA SOURCE PART NUMBER	VEHICLE DATE DIP	SITE TIME DIP	PRI OTH	VENDOR NAME VENDOR PART NO
AIRFRAME-A/B BOOSTER SECTION	AE61-0841/P1-302-00-81	FLIGHT	21E 810731	11 100		
<p>FAILURE MODE-OUT OF EXPECTED TEST VALUE-TEMPERATURE MEASUREMENTS IN THE THRUST SECTION INDICATED THE PRESENCE OF A HEAT SOURCE RELATED TO THE SUSTAINER ENGINE SYSTEM. THE LOCATION OF THE HEAT SOURCE COULD NOT BE ESTABLISHED. TWO MEASUREMENTS INDICATED 142 AND 124 DEGREES F AT 80 AND 190 AND 187 DEGREES F AT 800.</p> <p>SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT-THE THRUST SECTION TEMPERATURE WERE HIGHER THAN NORMAL BUT THERE WERE NO DETRIMENTAL EFFECTS.</p> <p>VEHICLE EFFECT-NONE.</p> <p>CORRECTIVE ACTION-NONE.</p>						
AIRFRAME-A/B BOOSTER SECTION	AE61-0841/P3-302-00-18	FLIGHT	18E 810526	13 76	YES NO	
<p>FAILURE MODE-OUT OF EXPECTED TEST VALUE. TEMPERATURE MEASUREMENTS AGENT AND P8717, MOUNTED ON THE JETTISON RAIL SUP-PORTS INDICATED A HIGH TEMPERATURE CONDITION STARTING AT 78 SECONDS. MAXIMUM TEMPERATURES RECORDED WERE 294 DEG AND 236 DEG, RESPECTIVELY.</p> <p>SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT. START OF TEMPERATURE RISE IS COINCIDENT WITH BASE REVERSAL AND IS PROBABLY CAUSED BY FLOW OF EXHAUST GAS INTO THE ENGINE COMPARTMENT.</p> <p>VEHICLE EFFECT-NONE.</p> <p>CORRECTIVE ACTION-NONE.</p>						
AIRFRAME-A/B BOOSTER SECTION	AE61-0839/P1-302-00-12 BOOSTER SECTION	FLIGHT	12E 810312	11 60	YES NO	
<p>FAILURE MODE-OUT OF EXPECTED TEST VALUE-AT 80 SECONDS THE AMBIENT TEMPERATURE NEAR THE B3 GAS GENERATOR IN QUAD 111 BEGAN TO EXCEED 150 DEGREES F, REACHING A MAXIMUM OF 237 DEGREES F AT BOOSTER CUTOFF.</p> <p>SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT-POSSIBLE EXPOSURE OF ENGINE COMPARTMENT COMPONENTS TO HIGHER THAN DESIRED TEMPERATURES. NO DETRIMENTAL EFFECTS OBSERVED IN ANY SYSTEMS.</p> <p>VEHICLE EFFECT-NONE.</p> <p>CORRECTIVE ACTION-NONE.</p>						
AIRFRAME-A/B BOOSTER SECTION	AE 60-0468/P3-301-00-09	FLIGHT	9E 810224	13 53	YES NO	
<p>FAILURE MODE-OUT OF EXPECTED TEST VALUE. AT 53 SECONDS THE AMBIENT TEMPERATURE NEAR THE B2 GAS GENERATOR IN QUAD 111 BEGAN TO EXCEED 150 DEGREES F. IT REACHED A MAXIMUM OF 246 DEGREES F AT 100 SECONDS AND DECREASED TO 227 DEGREES F</p>						

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# **DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE**

3. ITEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIF DATA SOURCE PART NUMBER	VEHICLE DATE DIF	SITE TIME DIF	PRI OTH	VENDOR NAME VENDOR PART NO
AT BOOSTER CUTOFF.						
SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT. THE OVER TEMPERATURE HAD NO OBSERVABLE EFFECT ON ANY AIRBORNE SYSTEM. O N PREVIOUS FLIGHTS (3E,4E) THE TEMPERATURE INCREASED UNTIL 800 WITHOUT DECAYING AS IT DID ON VEHICLE 9E.						
VEHICLE EFFECT-NONE.						
CORRECTIVE ACTION-NONE.						
AIRFRAME-A/B BOOSTER SECTION	AE60-0750/P5-502-00-04 NONE	FLIGHT	4E 801129	13 36	NO NO	
FAILURE MODE-OUT OF EXPECTED TEST VALUE. AMBIENT TEMPERATURE NEAR THE B2 GAS GENERATOR IN GUMD 111 SHOWED A CONSTANT INCREASE DURING FLIGHT EXCEEDING 130 DEGREES F AT APPROXIMATELY 36 SECONDS AND REACHING A MAXIMUM OF 204 DEGREES F AT DATA TERMINATION (BOOSTER CUTOFF).						
SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT. THE OVERTEMP HAD NO OBSERVABLE EFFECT ON ANY AIRBORNE SYSTEM. A SIMILAR TEMPERATURE INCREASE WAS OBSERVED ON VEHICLE 3E.						
VEHICLE EFFECT-NONE.						
CORRECTIVE ACTION-NONE. THIS TEMPERATURE RISE WAS DETERMINED TO BE NORMAL, CONSIDERING THE TRANSDUCER LOCATION.						
AIRFRAME-A/B BOOSTER SECTION	AC-60-0030/31-511-A7-05 B2 THRUST CHAMBER BOOT	CAPTIVE 27-77010-1 27-77010-2	5E 801129	31/8YC NO	YES NO	
FAILURE MODE-STRUCTURAL- B2 BOOT SUSTAINED SIGNIFICANT DAMAGE DURING THE HOT FIRING.						
SYSTEM EFFECT-NONE- THRUST SECTION INSTRUMENTATION DID NOT INDICATE ANY EVIDENCE OF HIGH TEMPERATURE.						
VEHICLE EFFECT-NONE.						
CORRECTIVE ACTION-BOOT WAS IND.						
AIRFRAME-A/B BOOSTER SECTION	AC-60-0047/31-310-A8-05 B2 THRUST CHAMBER BOOT	CAPTIVE	5E 801117	31	YES 60/C NO	
FAILURE MODE-STRUCTURAL- BOOT WAS DAMAGED DURING ENGINE OPERATION. FOUND DURING POST FIRING INSPECTION.						
SYSTEM EFFECT-NONE- NO EVIDENCE OF A HOT BOOT TAIL ENVIRONMENT WAS NOTED IN THE DATA.						
VEHICLE EFFECT-NONE.						
CORRECTIVE ACTION-UNKNOWN.						

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DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIF DATA SOURCE PART NUMBER	VEHICLE DATE DIF	SITE TIME DIF	PRI OTH	VENDOR NAME VENDOR PART NO	
AIRFRAME-A/B BOOSTER SECTION	AC-80-0048/32-313-A7-02 B2 THRUST CHAMBER BOOT	CAPTIVE 27-77010-1	2E 801158	82	YES NO		000003
FAILURE MODE-STRUCTURAL- THE B2 BOOT INCURRED SIGNIFICANT DAMAGE DURING TEST.							
SYSTEM EFFECT-NONE.							
VEHICLE EFFECT-NONE.							
CORRECTIVE ACTION-BOOT WAS IRD.							
AIRFRAME-A/B BOOSTER SECTION	AE80-0342/P3-303-00-03	FLIGHT	3E 801150	13 53	NO NO		005111
FAILURE MODE-OUT OF EXPECTED TEST VALUE-AMBIENT TEMPERATURE NEAR THE B2 GAS GENERATOR IN QUAD III INCREASED STEADILY AFTER APPROXIMATELY 8 SECONDS OF FLIGHT EXCEEDING 150 DEGS F AT APPROXIMATELY 53 SECONDS. MAXIMUM TEMPERATURE WAS OBSERVED AT APPROXIMATELY 110 SECONDS (240 DGF) WHEN DATA WENT OFF SCALE HIGH AND WAS NO LONGER CONSIDERED VALID.							
SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT-THE OVER TEMP HAD NO OBSERVABLE EFFECT ON ANY AIRBORNE SYSTEM.							
VEHICLE EFFECT-NONE.							
CORRECTIVE ACTION-UNKNOWN.							
AIRFRAME-A/B BOOSTER SECTION	AC-80-0045/31-508-A4-03 B2 THRUST CHAMBER BOOT	CAPTIVE 27-77010-1	3E 801029	31	YES NO		000002
FAILURE MODE-STRUCTURAL- BOOT WAS DAMAGED DURING ENGINE OPERATION. FOUND DURING POST FIRING INSPECTION.							
SYSTEM EFFECT-NONE- NO EVIDENCE OF A HOT BOAT TAIL ENVIRONMENT WAS NOTED IN THE DATA.							
VEHICLE EFFECT-NONE.							
CORRECTIVE ACTION-BOOT WAS IRD AND REPLACED.							
AIRFRAME-A/B BOOSTER SECTION	AE80-0324/P2-401-00-55	COUNTDOWN	35D 801022	12 -2100	NO NO		
FAILURE MODE-OUT OF TOLERANCE. THRUST SECTION TEMPERATURES WERE NOT AS EXPECTED DUE TO IMPROPER OPERATION OF THRUST SECTION HEATER.							
SYSTEM EFFECT-LOW TEMPERATURE ENVIRONMENT. THRUST SECTION TEMPERATURES WERE NOT AS EXPECTED DUE TO IMPROPER OPERATION OF THRUST SECTION HEATER.							
VEHICLE EFFECT-COUNTDOWN DELAYED 10 MINUTES 10 MINUTE HOLD REQUESTED BUT HOLD WAS EXTENDED 170 MINUTES WITH 39 MINUTE RECYCLE DUE TO OTHER VEHICLE PROBLEMS.							

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## DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIP DATA SOURCE PART NUMBER	VEHICLE DATE DIP	SITE TIME DIP	PRI OTH	VENDOR NAME VENDOR PART NO
CORRECTIVE ACTION-FIRST SWITCHED TO RECO UNIT THEN REPAIRED HEATER.						
AIRFRAME-A/B BOOSTER SECTION	AC-60-0044/31-307-A3-03 B2 THRUST CHAMBER BOOT	CAPTIVE	3C 801020	81	YES NO	YES 60/C NO
FAILURE MODE-STRUCTURAL- TWO OUTSIDE SEAM FACINGS AND ABOUT FOUR FEET OF CAMLOCK FLAP WERE TORN FROM THE BOOT BODY. BOOT HAD SLIPPED FROM THE RETAINING CABLE. THIS PROBLEM WAS FOUND DURING POST FIRING INSPECTION.						
SYSTEM EFFECT-NONE- NO EVIDENCE OF A HOT BOATTAIL ENVIRONMENT WAS INDICATED IN THE DATA.						
VEHICLE EFFECT-NONE.						
CORRECTIVE ACTION-BOOT WAS IRD AND REPLACED.						
AIRFRAME-A/B BOOSTER SECTION	AC-60-0041/32-312-A6-02 B1 THRUST CHAMBER BOOT	CAPTIVE	2C 801014	82	YES NO	YES 60/C NO
FAILURE MODE-STRUCTURAL- BOOT WAS TORN AND CAMLOCKS WERE MISSING.						
SYSTEM EFFECT-NONE. NO EVIDENCE OF A HOT BOAT TAIL ENVIRONMENT WAS FOUND IN THE DATA.						
VEHICLE EFFECT-NONE.						
CORRECTIVE ACTION-BOOT WAS REPLACED.						
AIRFRAME-A/B BOOSTER SECTION	AE60-0341/P1-402-01-71 MACELLE DOOR	FLIGHT	71D 801019	11 0	YES NO	YES NO
FAILURE MODE-ERRATIC OPERATION-INSTRUMENTATION INDICATED SLIGHTLY ERRATIC OPERATION (SLUGGISH CLOSURE AND SLIGHT RE OPENING) OF MACELLE DOORS IN QUADRANTS 2 AND 3.						
SYSTEM EFFECT-NONE.						
VEHICLE EFFECT-NONE.						
CORRECTIVE ACTION-NONE.						
AIRFRAME-A/B BOOSTER SECTION	AE60-0852/83-402-00-81 LOX TANK SENSE LINE RISEOFF DISCON MECT SHIELD	FLIGHT	81D 801018	8-3 0	YES NO	YES NO
FAILURE MODE-STRUCTURAL. LOSS OF RADIATION SHIELD IS BELIEVED TO HAVE OCCURRED AT LIPTOFF. LOSS OF SHIELD EXPOSED P NEUMATIC RISEOFF DISCONNECT TO RADIANT HEAT.						
SYSTEM EFFECT-NONE.						

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SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIF DATA SOURCE PART NUMBER	VEHICLE DATE DIF	SITE TIME DIF	PRI OTH	VENDOR NAME VENDOR PART NO	
VEHICLE EFFECT-LOSS OF VEHICLE INTEGRITY. LOX TANK WAS OVER PRESSURIZED DUE TO FALSE INDICATION TO LOX TANK PRESSURE REGULATOR. AS A RESULT THE INTERMEDIATE BULKHEAD REVERSED AND THE VEHICLE SELF DESTRUCTED.							990892
CORRECTIVE ACTION-REDESIGN RISEOFF DISCONNECT HEAT SHIELDS.							
AIRFRAME-A/B BOOSTER SECTION	AERD-0749/L1-402-00-37 MACELLE DOOR	FLIGHT	37D 801011	PALS-1 L/O	YES NO		999016
FAILURE MODE-FAIL TO OPERATE AT PRESCRIBED TIME-B2 SIDE QUAD 111 MACELLE DOOR FAILED TO CLOSE PROPERLY AFTER LIFTOFF F-DOOR WAS OBSERVED TO BE WIDE OPEN UNTIL MISSILE WAS APPROX. 30 FEET FROM LAUNCHER. THE DOOR THEN CLOSED WITH AN APPROX. 3 INCH OPENING OBSERVED UNTIL 15 SEC. WHEN THE DOOR APPEARED TO SHUT. CAUSES HAVE BEEN ATTRIBUTED TO MISSILE VIBRATION, INTERFERENCE AND POSSIBLE EXCESSIVE HINGE FRICTION.							
SYSTEM EFFECT-NONE.							
VEHICLE EFFECT-NONE.							
CORRECTIVE ACTION-NONE.							
AIRFRAME-A/B BOOSTER SECTION	AC-60-0037/32-511-A5-02 B2 THRUST CHAMBER BOOT	CAPTIVE 27-77013-1	2E 801008	B2	YES 50/C NO		999976
FAILURE MODE-STRUCTURAL- B2 BOOT INCURRED SIGNIFICANT DAMAGE DURING THE TEST.							
SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT- PERMITTED HOT GAS FLOW INTO B2 MACELLE.							
VEHICLE EFFECT-NONE.							
CORRECTIVE ACTION-UNKNOWN.							
AIRFRAME-A/B BOOSTER SECTION	AERD-0833/B2-403-00-33 MACELLE DOOR	FLIGHT	33D 800829	B-2 LIFTOFF	YES 50/CONVAIR NO		995116
FAILURE MODE-FAIL TO OPERATE AT PRESCRIBED TIME. MACELLE DOORS ON B1 SIDE OBSERVED ON FILM NOT TO HAVE CLOSED AS LONG AS IN VIEW. FILMS ALSO SHOWED THAT DOORS ON B2 SIDE WERE SLOW IN CLOSING BUT DID SO AFTER ABOUT 15 FEET OF VEHICLE MOTION.							
SYSTEM EFFECT-NONE.							
VEHICLE EFFECT-NONE.							
CORRECTIVE ACTION-UNKNOWN.							

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SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIF DATA SOURCE PART NUMBER	VEHICLE DATE DIF	SITE TIME DIF	PRI OTH	VENDOR NAME VENDOR PART NO	
AIRFRAME-A/B BOOSTER SECTION	AE60-0747/P4-402-00-79 FORWARD MACELLE DOOR	FLIGHT	79D 600919	14 0	YES NO		093103
FAILURE MODE-FAIL DURING OPERATION. MOTION PICTURES INDICATED THE 81 FORWARD MACELLE DOOR FAILED TO CLOSE COMPLETELY AT LIFTOFF. THE DOOR BOUNCED OPEN 2 TO 3 TIMES AFTER THE PINS WERE PULLED AND REMAINED OPEN APPROXIMATELY 2 TO 3 INCHES FOR 20 SECONDS AFTER LAUNCH.							
SYSTEM EFFECT-NONE.							
VEHICLE EFFECT-NONE.							
CORRECTIVE ACTION-UNKNOWN.							
AIRFRAME-A/B BOOSTER SECTION	AC-80-0033/32-510-A4-02 SUST. THRUST CHAM. BOOT	CAPTIVE 27-77011-1	2E 600913	32 98	YES NO	YES 60/C	099066
FAILURE MODE-STRUCTURAL- BOOT WAS DAMAGED AND HAD SLIPPED OVER THE CHAMBER LUGS. DISCOVERED DURING POST FIRING INSPECTION.							
SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT- PERMITTED HOT GAS FLOW INTO THE THRUST SECTION.							
VEHICLE EFFECT-NONE.							
CORRECTIVE ACTION-UNKNOWN.							
AIRFRAME-A/B BOOSTER SECTION	AE60-0338/P1-402-00-80 ENGINE COMPARTMENT	FLIGHT	60D 600702	11 98	YES NO	YES 60 CONVAIR	097033
FAILURE MODE-OUT OF EXPECTED TEST VALUE. ENGINE COMPARTMENT TEMPERATURE EXCEEDED NORMAL RANGE. MEASUREMENT AT 487 ME AR VERNIER HYDRAULIC SUPPLY GUARDIAN INDICATED 399 DEGF AT 100 SECONDS. P147 ENGINE COMPARTMENT AMBIENT TEMP AT GUAD V INDICATED 217 DEGF AT 98 SECONDS. AT 777 AND P4717 ALSO READ HIGH BUT ARE CONSIDERED QUESTIONABLE.							
SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT IN ENGINE COMPARTMENT. CAUSE UNDETERMINED BUT PROBABLY INFLUX OF EXHAUST GASES AT BASE PRESSURE REVERSAL.							
VEHICLE EFFECT-NONE.							
CORRECTIVE ACTION-IMPROVED ENGINE BOOTS.							
AIRFRAME-A/B BOOSTER SECTION	EIR-017/14-512-1L-8E BOOTS-CLAMP	CAPTIVE	600613	1-4	YES 60/C	NO	
FAILURE MODE-STRUCTURAL. BOOT WAS TORN DURING TEST.							
SYSTEM EFFECT-NONE.							

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SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIP DATA SOURCE PART NUMBER	VEHICLE DATE DIP	SITE TIME DIP	PRI OIM	VEHICLE NAME VEHICLE PART NO
VEHICLE EFFECT-NONE.						094196
CORRECTIVE ACTION-NONE.						
AIRFRAME-A/B BOOSTER SECTION	ETR-015/14-510-11-SE B2 THRUST CHAMBER BOOT CLAMP	CAPTIVE	800328	1-4	YES 60/C NO	092504
FAILURE MODE-FAILURE DURING OPERATION. BOOT CAME UNSNAPPED DURING TEST AS REVEALED DURING POST TEST INSPECTION.						
SYSTEM EFFECT-LOSS OF STRUCTURAL INTEGRITY. SLIGHT RISE IN B2 MACELLE AMBIENT TEMPERATURE.						
VEHICLE EFFECT-NONE.						
CORRECTIVE ACTION-REPAIR BOOT.						
AIRFRAME-A/B BOOSTER SECTION	ETR-014/14-509-11-SE B2 THRUST CHAMBER BOOT	CAPTIVE	800328	1-4	YES 60/C NO	094269
FAILURE MODE-FAILURE DURING OPERATION-BOOT CAME UNSNAPPED DURING TEST.						
SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT. B2 MACELLE TEMPERATURE INDICATED A SLIGHT RISE.						
VEHICLE EFFECT-NONE.						
CORRECTIVE ACTION-UNKNOWN.						
AIRFRAME-A/B BOOSTER SECTION	AE80-0318/82-403-00-23	FLIGHT	82D 800422	B-2 114	YES NO	090923
FAILURE MODE-OUT OF EXPECTED TEST VALUE. ALTHOUGH THE BOOSTER SECTION THERMAL ENVIRONMENT WAS NOT MONITORED, IT WAS CONCLUDED THAT HIGH TEMPERATURES EXISTED DURING THE BOOSTER STAGE.						
SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT.						
VEHICLE EFFECT-LOSS OF VEHICLE STABILITY. IT HAS BEEN HYPOTHEZIZED THAT A HIGH-TEMPERATURE ENVIRONMENT IN THE BOOSTER SECTION RESULTED IN A HYDRAULIC SYSTEM FAILURE WHICH IN TURN RESULTED IN A FLIGHT CONTROL FAILURE, CAUSING TEMPORARY VEHICLE INSTABILITY.						
CORRECTIVE ACTION-NONE.						
AIRFRAME-A/B BOOSTER SECTION	ETR-011/14-509-F1-SE BOOT	CAPTIVE	800418	1-4	YES 60/C NO	
FAILURE MODE-FAILURE DURING OPERATION-BOOT BECAME PARTIALLY UNSNAPPED WHICH ALLOWED IT TO SLIP ON THE CHAMBER.						
SYSTEM EFFECT-PERMITTED HOT GAS BLOWBACK INTO THRUST SECTION.						

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SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIP DATA SOURCE PART NUMBER	VEHICLE DATE DIP	SITE TIME DIP	PRI OTH	VENDOR NAME VENDOR PART NO
VEHICLE EFFECT-PREMATURE PROPULSION CUTOFF-TEST WAS PREMATURELY TERMINATED BY AN OBSERVER AT 7 PLUS 10.43 SEC (BECAUSE PLUS 0.2 SEC) WHEN THE SUSTAINER ENVIRONMENTAL TEMPERATURE EXCEEDED REDLINE.						
CORRECTIVE ACTION-ENGINEERING CHANGE REQUEST ECR WAS WRITTEN REQUESTING A CHANGE IN BOOT MOUNTING.						
AIRFRAME-A/B BOOSTER SECTION	A460-0130/P2-48N-04-25 THRUST CONE MOUNTING FLANGE	COMPOSITE-FRD/DPL 55D 600329	12	YES NO		
FAILURE MODE-LEAK-EXTERNAL. DURING TANKING TEST, A FUEL LEAK WAS FOUND AT THE MOUNTING FLANGE OF THE APEX THRUST CO ME.						
SYSTEM EFFECT-NONE.						
VEHICLE EFFECT-NONE.						
CORRECTIVE ACTION-LEAK CORRECTED WHEN TANK WAS OPENED TO REPAIR INSULATION BULKHEAD.						
AIRFRAME-A/B BOOSTER SECTION	A2C-27-116/P1-405-00-42 BOOSTER ENGINE BOOT CABLES	FLIGHT 42D 600308	11 76	YES NO		
FAILURE MODE-FAIL DURING OPERATION. SHIFTS OF THE BOOSTER ENGINE BOOTS ALLOWED HOT GASES TO FLOW INTO THE ENGINE COMPARTMENT AFTER BASE PRESSURE REVERSAL, AT APPROXIMATELY 73 SECONDS.						
SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT. ENGINE COMPARTMENT TEMPERATURES BECAME AN ABNORMAL INCREASE AT 76 SECONDS, THE MAXIMUM TEMPERATURE REACHING THE UPPER BAND LIMIT OF 403 DEG AT 101 SECONDS.						
VEHICLE EFFECT-LOSS OF VEHICLE STABILITY. THE HIGH TEMPERATURES APPARENTLY CAUSED A FAILURE IN THE PNEUMATIC CHARGE LINE TO THE VERNIER HYDRAULIC ACCUMULATOR SO THAT CHARGE PRESSURE BLEW OFF AT ABOUT 98 SECONDS. THE ACCUMULATOR FAILURE CAUSED LOSS OF VERNIER CONTROL AND CONSEQUENT LOSS OF VEHICLE ATTITUDE CONTROL.						
CORRECTIVE ACTION-A SPECIAL BOOT CABLE ATTACHMENT WAS USED ON SUBSEQUENT MISSILES.						
AIRFRAME-A/B BOOSTER SECTION	32-408-C6-24 SUSTAINER BOOT	CAPTIVE 24D 391008	3-2 261.14	YES 60/C NO		
FAILURE MODE-STRUCTURAL-SUSTAINER BOOT (SERIES C TYPE) WAS BLOWN FREE OF THE VEHICLE SOMETIME DURING THE FIRING.						
SYSTEM EFFECT-NONE.						
VEHICLE EFFECT-NONE.						
CORRECTIVE ACTION-UNKNOWN.						



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SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIF DATA SOURCE PART NUMBER	VEHICLE DATE DIF	SITE TIME DIF	PRI OTH	VENDOR NAME VENDOR PART NO	
AIRFRAME-A/B BOOSTER SECTION	AZC-27-078/P3-404-00-17	FLIGHT	170 990918	13 81	YES NO		000035
<p>FAILURE MODE-OUT OF TOLERANCE. SIGNIFICANT TEMPERATURE INCREASES OCCURRED IN THE THRUST SECTION STARTING AT APPROXIMATELY 81 SECONDS. THE GREATEST INCREASE WAS OBSERVED IN QUAD 2 REACHING 387 DEG F AT 108 SECONDS.</p> <p>SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT. TEMPERATURES WERE NOT HIGH ENOUGH TO CAUSE DAMAGE TO COMPONENTS IN THE AREA.</p> <p>VEHICLE EFFECT-NONE</p> <p>CORRECTIVE ACTION-NONE.</p>							
AIRFRAME-A/B BOOSTER SECTION	AZC-27-054/P3-403-00-14	FLIGHT	140 990911	13 84.5	YES NO		000027
<p>FAILURE MODE-OUT OF EXPECTED TEST VALUE. QUADRANT 3 ENGINE COMPART TEMPERATURE, NEAR FUEL STAGING VALVE, STARTED SUDDEN RISE AT 84.5 SECONDS. THIS TEMPERATURE EXCEEDED UPPER BAND LIMIT OF 186 DEGREES FROM 80 UNTIL 125 SECONDS. TEMPERATURE IN QUADRANT 2 WAS LOWER BUT INDICATED SAME TREND. TEMPERATURES IN QUADRANTS 1 AND 4 REMAINED BETWEEN 39 AND 75 DEGREES.</p> <p>SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT. TEMPERATURES WERE NOT HIGH ENOUGH TO CAUSE DAMAGE TO COMPONENTS IN THE AREA.</p> <p>VEHICLE EFFECT-NONE.</p> <p>CORRECTIVE ACTION-NONE.</p>							
AIRFRAME-A/B BOOSTER SECTION	EM132/P4-402-00-10	PRF	100 990503	14 27	YES NO		000100
<p>FAILURE MODE-OUT OF EXPECTED TEST VALUE. DURING FLIGHT READINESS FIRING TEMPERATURE AT THE ENGINE CONTROL PNEUMATIC MANIFOLD INCREASED GRADUALLY TO A MAXIMUM OF 203 DEGREES F AT 51 SECONDS. NO SIGN OF FIRE WAS OBSERVED DURING OR AFTER TEST.</p> <p>SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT. THE BOOSTER SECTION EXPERIENCED AN OVER TEMPERATURE CONDITION DURING THE HOT FIRING. NO DAMAGE WAS INCURRED.</p> <p>VEHICLE EFFECT-NONE. NO DETRIMENTAL EFFECTS OBSERVED OR INDICATED ON ANY VEHICLE SYSTEM OR COMPONENT.</p> <p>CORRECTIVE ACTION-NONE INDICATED.</p>							

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SUR-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIP DATA SOURCE PART NUMBER	VEHICLE DATE DIP	SITE TIME DIP	PRI OTH	VEHICLE NAME VENDOR PART NO
AIRFRAME-A/B BOOSTER SECTION	FTAB085/P4-402-00-10 ENGINE COMPARTMENT	FRF	100 990903	14 PLUS 4	NO NO	
<p>FAILURE MODE-OUT OF SPECIFICATION OR TOLERANCE. AT PLUS 4 SECONDS, AN ENGINE COMPARTMENT TEMPERATURE STARTED A RISE FROM 77 DEG AND REACHED A MAXIMUM OF 203 DEG AT 71 SECONDS WHEN ENGINE COMPARTMENT WATER WAS TURNED ON.</p> <p>SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT. A HIGH TEMPERATURE (203 DEG) WAS INDICATED IN THE ENGINE COMPARTMENT.</p> <p>VEHICLE EFFECT-NONE.</p> <p>CORRECTIVE ACTION-ENGINE COMPARTMENT WATER WAS TURNED ON AND TEMPERATURE BEGAN TO DECREASE. POST-TEST INVESTIGATION SHOWED THE ENGINE COMPARTMENT TO BE CLEAN WITH NO EVIDENCE OF ANY FIRE.</p>						
AIRFRAME-A/B BOOSTER SECTION	ZC-7-223/P2-303-00-11 ENGINE COMPARTMENT	FLIGHT	11C 990824	12 035	YES NO	YES NO
<p>FAILURE MODE-OUT OF EXPECTED TEST VALUE. ENGINE COMPARTMENT TEMPERATURE ABOVE EXPECTED VALVES AS PROBABLE RESULT OF INFUX OF HOT EXHAUST GASES THROUGH ENGINE BOOTS STARTING AT 83.5 SECONDS.</p> <p>SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT. ENGINE COMPARTMENT TEMPERATURES INCREASED STARTING AT 83.5 SECONDS. MEASUREMENT PLAT (ENGINE COMPARTMENT AMBIENT) SHOWED PEAK OF 169 DEG AT 105 SECONDS. P6077 NEAR FUEL STAGING VALVE SHOWED PEAK OF 193 DEG AT 104 SECONDS.</p> <p>VEHICLE EFFECT-NONE. NO DETRIMENTAL EFFECTS NOTED.</p> <p>CORRECTIVE ACTION-SUBSEQUENT IMPROVEMENT OF ENGINE BOOTS AND HEATSHIELD ON SERIES D, E AND F VEHICLES.</p>						
AIRFRAME-A/B BOOSTER SECTION	ZC-7-223/P2-303-00-11	FLIGHT	11C 990824	12 46.05	YES NO	YES NO
<p>FAILURE MODE-STRUCTURAL. FALLING OBJECTS WERE NOTED ON TRACKING FILM. FIRST OBJECT OBSERVED AT 46.8 SECONDS APPEARED TO BE ORANGE, FLAT AND OBLONG ABOUT 8 OR 5 FEET WIDE. ORIGIN APPARENTLY NEAR 82 ENGINE MANIFOLD. SECOND OBJECT OBSERVED AT 50.5 SECONDS FROM SAME AREA.</p> <p>SYSTEM EFFECT-NONE. LOSS OF OBJECTS HAD NO APPARENT EFFECT ON STRUCTURAL INTEGRITY OF VEHICLE.</p> <p>VEHICLE EFFECT-NONE. SMALL FIREBALLS WERE OBSERVED INTERMITTENTLY IN ENGINE EXHAUST FOR 20 SECONDS AFTER SECOND FALLING OBJECT. CORRELATION NOT CONFIRMED.</p> <p>CORRECTIVE ACTION-NONE.</p>						

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SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIF DATA SOURCE PART NUMBER	VEHICLE DATE DIF	SITE TIME DIF	PRI OTH	VENDOR NAME VENDOR PART NO
AIRFRAME-A/B BOOSTER SECTION	31-409-84-09 B66 EXHAUST DUCT BOOT	CAPTIVE	90 590904	81	YES NO	694963
FAILURE MODE-STRUCTURAL. BOOT FOUND TORN ON SEAM AT LOWER CLAMP ATTACHMENT. DISCOVERED DURING POST TEST INSPECTION.						
SYSTEM EFFECT-NONE. NO HIGH TEMPERATURES NOTED IN THRUST SECTION.						
VEHICLE EFFECT-NONE.						
CORRECTIVE ACTION-REPAIR BOOT.						
AIRFRAME-A/B BOOSTER SECTION	2C-7-221/PE-306-00-08	FLIGHT	9C 590721	12 85	NO NO	695097
FAILURE MODE-OUT OF EXPECTED TEST VALUE. TEMPERATURE MEASUREMENT PLAT INDICATED LARGE TEMPERATURE RISE STARTING AT APPROXIMATELY 65 SECONDS. MAXIMUM TEMPERATURE WAS 289 DEG F. BASE PRESSURE REVERSAL APPEARS TO BE MOST PROBABLE CAUSE.						
SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT. AT ABOUT 65 SECONDS PLAT STARTED INCREASING FROM 69 DEG F AND REACHED A MAXIMUM OF 289 DEG F AT 113 SECONDS. ALL OTHER ENGINE COMPARTMENT TEMPERATURE MEASUREMENTS SHOWED MINOR INCREASES DURING THIS INTERVAL. HIGHEST TEMPERATURE OF APPROXIMATELY 70 DEG F WAS RECORDED BY ASSET AT 93 SECONDS.						
VEHICLE EFFECT-NONE. NO DETRIMENTAL EFFECTS NOTED AS RESULT OF HIGH TEMPERATURE.						
CORRECTIVE ACTION-UNKNOWN.						
AIRFRAME-A/B BOOSTER SECTION	52-409-84-02 BOOT	CAPTIVE	2D 590322	92	YES NO	692220
FAILURE MODE-STRUCTURAL. POST TEST INSPECTION REVEALED TORN BOOT.						
SYSTEM EFFECT-NONE. NO ABNORMAL ENGINE COMPARTMENT TEMPERATURES.						
VEHICLE EFFECT-NONE.						
CORRECTIVE ACTION-REPLACE BOOT.						
AIRFRAME-A/B BOOSTER SECTION	52-409-84-02 B2 BOOT	CAPTIVE	2D 590322	92	YES NO	692220
FAILURE MODE-STRUCTURAL. POST TEST INSPECTION REVEALED TORN BOOT.						
SYSTEM EFFECT-NONE. NO ABNORMAL TEMPERATURE INCREASES.						
VEHICLE EFFECT-NONE.						

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CORRECTIVE ACTION-REPLACE BOOT.						
AIRFRAME-A/B BOOSTER SECTION	9B-02-003 SUPPORT, JETTISON ROLLER	FAR 7-78096	7D 590327	ETR	YES NO	YES CONVAIR-FORT W NO ORTH
FAILURE MODE-STRUCTURAL-THREE SUPPORTS CRACKED FROM MISALIGNMENT DURING DEMATING AFTER 40 INCHES OF SEPARATION WITH MISSILE HORIZONTAL. (ONE FAILURE WAS ON MISSILE SD ON 4/7/59 AND TWO WERE ON 7D DATED 5/27/59). AN EGG-SHAPED INDENTATION OCCURS TO BOOSTER SECTION AT DEMATING RESULTING IN MISALIGNMENT UP TO 1/2 INCH. ANOTHER MISALIGNMENT PROBLEM AT MATE-DEHATE IS MOVEMENT OF THE OVERHEAD CHAIN. ENGINEERING CALCULATIONS INDICATE THAT THIS DISCREPANCY SHOULD NOT CAUSE TROUBLE DURING STAGING IN FLIGHT.						
CORRECTIVE ACTION-THE LAMINATED SUPPORTS WERE REPLACED WITH ALUMINUM SUPPORTS AS USED ON THE C SERIES. EFFECTIVE ON 37D AND ON 37D AND ON (ESTIMATED).						
AIRFRAME-A/B BOOSTER SECTION	31-307-B5-02 STRUTS	CAPTIVE	2C 590106	81	YES NO	
FAILURE MODE-STRUCTURAL. THREE STRUTS LOCATED IN THE MISSILE FAIRINGS WERE FOUND BROKEN DURING POST TEST INSPECTION.						
SYSTEM EFFECT-NONE.						
VEHICLE EFFECT-NONE.						
CORRECTIVE ACTION-REPAIR STRUTS.						
AIRFRAME-A/B BOOSTER SECTION	31-306-B4-02 DIAGONAL STRUT	CAPTIVE 7-77277-13 AND 13	2C 581224	81	YES NO	
FAILURE MODE-STRUCTURAL. POST TEST INSPECTION REVEALED TEN DIAGONAL STRUTS LOCATED BETWEEN STATION 1840 AND THE FIRE SHIELD IN THE MISSILE FAIRINGS WERE BROKEN.						
SYSTEM EFFECT-NONE.						
VEHICLE EFFECT-NONE.						
CORRECTIVE ACTION-STRUTS WERE REPAIRED.						
AIRFRAME-A/B BOOSTER SECTION	PTA 4422/P2-301-00-3	PRP	3C 581217	18	NO NO	
FAILURE MODE-OUT OF SPECIFICATION OR TOLERANCE. MINOR ENGINE COMPARTMENT FIRE AFTER SHUTDOWN.						

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SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIP DATA SOURCE PART NUMBER	VEHICLE DATE DIP	SITE TIME DIP	PRI OTH	VENDOR NAME VENDOR PART NO	
SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT. FIRE CAUSED NEGLIGIBLE DAMAGE. NO COMPONENT CHANGES WERE NEEDED.							091140
VEHICLE EFFECT-FIRE.							
CORRECTIVE ACTION-NONE.							
AIRFRAME-A/B BOOSTER SECTION	FTA 4410/P4-201-00-12	PRF	12B 281121	14 -2700	NC NO		091149
FAILURE MODE-OUT OF EXPECTED TEST VALVE. ENGINE COMPARTMENT TEMP. WAS INDICATED BY LANDLINE TO BE 33 DEG WHEN RECO HEATER WAS SET AT 125 TO 135 DEG.							
SYSTEM EFFECT-LOW TEMPERATURE ENVIRONMENT. TEMPERATURE IN THRUST SECTION WAS INDICATED TO BE ONLY 35 DEG.							
VEHICLE EFFECT-CO-NDOWN DELAYED. 8 MINUTE HOLD.							
CORRECTIVE ACTION-HOLD TO VERIFY THRUST SECTION TEMPERATURE. CHECKED HEAT DUCT AT TEST STAND WHICH WAS OK. TELEMETRY INDICATED 60 DEG. PROBLEM WAS APPARENTLY LANDLINE INSTRUMENTATION.							
AIRFRAME-A/B BOOSTER SECTION	ZC-7-203/P3-202-00-08 B1 ENGINE MACELLE FAIRING	FLIGHT	68 240016	13 LIFTOFF	NO NO	NO GO CONVAIR	090352
FAILURE MODE-STRUCTURAL. HOLES WERE TORN IN THE FAIRING ON THE B1 ENGINE SIDE WHEN, DURING LIFTOFF THE LAUNCHER RELEASE ARM ACTUATING STRUT AND LAUNCHER HEAD FAILED TO ACTUATE PROPERLY AND WERE DRAGGED ALONG THE FAIRING AS THE MISSILE ROSE.							
SYSTEM EFFECT-LOSS OF STRUCTURAL INTEGRITY. HOLES WERE TORN IN THE FAIRING BUT NO APPARENT DAMAGE OF SIGNIFICANCE WAS DONE TO ANY INTERNAL SYSTEMS.							
VEHICLE EFFECT-LOSS OF VEHICLE INTEGRITY. AERODYNAMIC INTEGRITY OF THE VEHICLE WAS DESTROYED ON THE B1 ENGINE SIDE OF THE BOOSTER SECTION. STUDIES HAVE REVEALED NO CONNECTION OF THIS DAMAGE WITH THE SUBSEQUENT LOSS OF THE VEHICLE. HOWEVER.							
CORRECTIVE ACTION-CHANGE LAUNCHER MAINTENANCE AND CHECKOUT PROCEDURES.							
AIRFRAME-A/B BOOSTER SECTION	20-7-079/11-203-C1-07 GOLD PLATING ON HEAT SHIELD	CAPTIVE	7B 260908	1-1	NO NO		090948
FAILURE MODE-FAIL DURING OPERATION. THE GOLD PLATING ON THE AFT SURFACE OF THE HEAT SHIELD WAS BURNED AWAY BY AN ENGINE COMPARTMENT FIRE. THE ORIGIN OF THE FIRE IS UNKNOWN.							
SYSTEM EFFECT-NONE. THERE WAS NO AIRFRAME EFFECT FROM THE GOLD PLATING BURNING OFF.							
VEHICLE EFFECT-NONE.							
CORRECTIVE ACTION-THE CENTRAL PORTION OF THE HEAT SHIELD WAS COVERED WITH A THIN STAINLESS STEEL PLATE.							

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SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIP DATA SOURCE PART NUMBER	VEHICLE DATE DIP	SITE TIME DIP	PRI OTH	VENO-M NAME VEHICOR PART NO
AIRFRAME-A/B BOOSTER SECTION	EN-1086/TEST14-308-84 FLAME CURTAIN	CAPTIVE	980806	1-4	YES NO	993035
<p>FAILURE MODE-FAILED DURING OPERATION. FLAME CURTAIN FAILED.</p> <p>SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT. RESULTED IN NUMEROUS DATA TRACES EXPERIENCING EXCESSIVE INSTRUMENTATION SHIFTS DUE TO HEATING.</p> <p>VEHICLE EFFECT-NONE.</p> <p>CORRECTIVE ACTION-UNKNOWN.</p>						
AIRFRAME-A/B BOOSTER SECTION	ZC-7-098/P2-103-00-11 VERNIER FAIRING	FLIGHT	11A 980220	12 51.9	YES NO	990289
<p>FAILURE MODE-STRUCTURAL. IT IS CONCLUDED THAT AERODYNAMIC HEATING IN THE VERNIER AREA OCCURRED DUE TO RAM AIR ENTERING THROUGH THE VERNIER FAIRING. THIS RAM AIR IN TURN CAUSED SHORTING OF THE VERNIER FEED BACK TRANSDUCERS.</p> <p>SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT WITHIN THE VERNIER AREA.</p> <p>VEHICLE EFFECT-LOSS OF VEHICLE STABILITY WITH VEHICLE ENGINES SHUTTING DOWN AT 113.5 SECONDS.</p> <p>CORRECTIVE ACTION-COMPLETE SEAL AT FORWARD PORTION OF FAIRING. ALUMINUM SHIELD TO COVER END OF VERNIER FAIRING. FEE BACK TRANSDUCER SOLDERED PLUGS REPLACED WITH PERMANENT APPLICE. TRANSDUCER WIRING SLEEVED IN FIBERGLASS AND ROUTED THROUGH CONDUIT. ALL VERNIER ENGINE ARE WIRING WRAPPED IN ALUMINUM FOIL. NICHROME WILL REPLACE WIRING ON TWO EXCITATIONS LEADS TO THE TWO VERNIER FEED BACK TRANSDUCERS.</p>						
AIRFRAME-A/B BOOSTER SECTION	ZC-7-095/P4-102-00-13 ENGINE COMPARTMENT	FLIGHT	13A 980207	14 85	YES NO	992833
<p>FAILURE MODE-OUT OF EXPECTED TEST VALUE. MAXIMUM TEMPERATURE RECORDED WAS 390 DEGREES F AT 114 SECONDS RECORDED BY ASSBT. THIS MEASUREMENT REACHED 190 DEGREES F AT 85 SECONDS AND REMAINED ABOVE THIS LEVEL UNTIL 140 SECONDS.</p> <p>SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT. HOWEVER, NO DETRIMENTAL EFFECTS WERE OBSERVED.</p> <p>VEHICLE EFFECT-NONE. HOWEVER, VEHICLE BREAKUP OCCURRED AT 186 SECONDS DUE TO INSTABILITY WHEN FLIGHT CONTROL SYSTEM MALFUNCTIONED EARLY IN FLIGHT.</p> <p>CORRECTIVE ACTION-NONE.</p>						
AIRFRAME-A/B BOOSTER SECTION	ZC-7-095/P4-102-00-13 VERNIER FAIRING	FLIGHT	13A 980207	14 85.8	YES NO	
<p>FAILURE MODE-STRUCTURAL. IT IS CONCLUDED THAT AERODYNAMIC HEATING IN THE VERNIER AREA OCCURRED DUE TO RAM AIR ENTERING THROUGH THE VERNIER FAIRING. THIS RAM AIR IN TURN CAUSED SHORTING OF THE VERNIER FEEDBACK TRANSDUCERS.</p>						

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CONVAIR DIVISION

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DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIF DATA SOURCE PART NUMBER	VEHICLE DATE DIF	SITE TIME DIF	PRI OTH	VENDOR NAME VENDOR P/RT NO
SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT WITHIN THE VERNIER AREA.						
VEHICLE EFFECT-LOSS OF VEHICLE STABILITY WITH VEHICLE BREAKUP OCCURRING AT 158 SECONDS.						
CONNECTIVE ACTION-COMPLETE SEAL AT FORWARD PORTION OF FAIRING. ALUMINUM SHIELD TO COVER END OF VERNIER FAIRING. FCE DBACK TRANSDUCER SOLDERED PLUGS REPLACED WITH PERMANENT SPLICED. TRANSDUCER WIRING SLEEVED IN FIBERGLASS AND ROUTED THROUGH CONDUIT. ALL VERNIER ENGINE AREA WIRING WRAPPED IN ALUMINUM FOIL. NICHROME WILL REPLACE WIRING ON TWO EXCITATION LEADS TO THE TWO VERNIER FEEDBACK TRANSDUCERS.						
AIRFRAME-A/B BOOSTER SECTION	C-7-093-12A/P4-102-00-12	FLIGHT	12A 571817	14	YES NO	
FAILURE MODE-OUT OF EXPECTED TEST VALUE. AMBIENT TEMPERATURE NEAR THE OIL VENT LINE IN QUAD IV, STATION 1216 ROSE FROM 0 DEG AT TEST START TO A MAXIMUM OF 220 DEGREES F AT 80 SECONDS WHERE IT REMAINED CONSTANT. TWO OTHER ENGINE COMPARTMENT TEMPERATURES REMAINED BETWEEN 100 AND 180 DEGREES F.						
SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT. TEMPERATURE WAS NOT DETRIMENTAL TO MISSILE HARDWARE AS EVIDENCED BY TESTED DATA.						
VEHICLE EFFECT-NONE.						
CORRECTIVE ACTION-NONE.						
AIRFRAME-A/B BOOSTER SECTION	TS-11,113SP-8 B2 ENGINE BOOT	CAPTIVE	5A 571029	1-1	YES 60/C NO	
FAILURE MODE-STRUCTURAL-POST TEST INSPECTION REVEALED THAT THE FIBERGLASS BOOT HAD TWISTED AROUND THE OPEN END OF THE LUBE-OIL DRAIN PIPE DURING ENGINE GIMBALLING.						
SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT-AT ENGINE CUTOFF A FIRE WAS NOTED IN THE VICINITY OF THE B2 THRUST CHAMBER. THE FIRE WAS CAUSED BY ACCUMULATION OF LUBE-OIL ON THE TWISTED FIBERGLASS BOOT.						
VEHICLE EFFECT-FIRE-AS A RESULT OF THE FIRE, DAMAGE WAS INCURRED BY THE B2 NACELLE, SKIRT WEL AND QUAD- THREE STRUTS.						
CORRECTIVE ACTION-UNKNOWN.						
AIRFRAME-A/B BOOSTER SECTION	EM-7331-1,112-SP5-03 B2 ENGINE ANTI-FIRE BOOT	CAPTIVE	5A 571024	1-1	YES 60/C NO	
FAILURE MODE-STRUCTURAL. THE B2 ENGINE ANTI-FIRE BOOT BECAME TWISTED OUT OF SHAPE.						
SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT. THIS HIGH TEMPERATURE ENVIRONMENT WAS CAUSED BY ACCUMULATION OF LUBE OIL IN THE BOOT AFTER IT WAS TWISTED OUT OF SHAPE.						
VEHICLE EFFECT-FIRE CAUSED BY THE ACCUMULATION OF LUBE OIL.						

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DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIP DATA SOURCE PART NUMBER	VEHICLE DATE DIP	SITE TIME DIP	PRI OTH	VENDOR NAME VENDOR PART NO	
CORRECTIVE ACTION-UTILIZATION OF A HEAT SHIELD.							000200
AIRFRAME-A/B BOOSTER SECTION	EN-7511-1,111-3P4-03 B2 MACELLE	CAPTIVE	SA 571017	1-1	NO		000200
FAILURE MODE-STRUCTURAL. FIRE DAMAGE WAS SUSTAINED BY THE B2 MACELLE IN QUADRANT III.							
SYSTEM EFFECT-LOSS OF STRUCTURAL INTEGRITY. THE FIRE DAMAGE SUSTAINED BY THE B2 MACELLE WAS CAUSED BY THE HIGH TEMP							
ERATURE ENVIRONMENT AS A RESULT OF NO HEAT SHIELD.							
VEHICLE EFFECT-NONE.							
CORRECTIVE ACTION-UTILIZATION OF A HEAT SHIELD.							
AIRFRAME-A/B BOOSTER SECTION	EN-6011-1,110-3P3-03 HEAT RADIATION SHIELD WEB PROTECTI ON PLATES	CAPTIVE	SA 571019	1-1	NO		000204
FAILURE MODE-STRUCTURAL. SEVERAL OF THE LOWER WEB PROTECTION PLATES INSTALLED AS PART OF THE HEAT RADIATION SHIELD							
WERE BUCKLED OR BURNED.							
SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT.							
VEHICLE EFFECT-FIRE-THE HIGH TEMPERATURE ENVIRONMENT WAS CAUSED BY THE B66 EXHAUST GASES BEING CARRIED INTO THE ENG							
INE COMPARTMENT THROUGH OPENINGS FOR THE ENGINES AND THE B66 EXHAUST DUCT BY CONVECTION CURRENTS.							
CORRECTIVE ACTION-USE ENGINE ANTI-FIRE BOOTS AND HEATSHIELD.							
AIRFRAME-A/B BOOSTER SECTION	EN-630/109-3P2-03 B2 MACELLE	CAPTIVE	SA 571003	1-1	NO		000200
FAILURE MODE-STRUCTURAL. POST TEST OBSERVATION REVEALED EVIDENCE OF FIRE IN THE THRUST SECTION WHICH CAUSED MINOR D							
AMAGE IN THE LOWER PART OF QUADRANT III. SMOKE AREA BURNING TWO STRUTS. MOTION PICTURE INDICATE THIS MAY HAVE BEEN CA							
USED BY 66 EXHAUST PRODUCTS WHICH START BURNING JUST BELOW THE EXHAUST DUCT AND DRIFT INTO THE B2 MACELLE THROUGH TH							
E OPENINGS FOR THE B2 CHAMBER.							
SYSTEM EFFECT-NONE.							
VEHICLE EFFECT-FIRE							
CORRECTIVE ACTION-UTILIZATION OF BOOTS.							
AIRFRAME-A/B BOOSTER SECTION	ZC-2083-8A/P4-102-00-06 BOOSTER BOOTS	FLIGHT	SA 570825	14 20	YES NO		
FAILURE MODE-LEAK EXTERNAL. BETWEEN 20 AND 40 SECONDS, THE ENGINE COMPARTMENT TEMPS INDICATED A FIRE OR RECIRCULATE							
ION OF HOT GASES FROM THE CHAMBERS. VEHICLE CONFIGURATION DID NOT INCLUDE ENGINE BOOTS.							



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SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIF DATA SOURCE PART NUMBER	VEHICLE DATE DIF	SITE TIME DIF	PRI OTH	VENDOR NAME VENDOR PART NO
<p>SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENTAL. ENGINE COMPARTMENT AND HEAT SHIELD TEMPERATURES INDICATED IN EXCESS OF 1000 DEG/F.</p> <p>VEHICLE EFFECT-PREATURE BOOSTER ENGINE SHUTDOWN. PROPULSION SYSTEM FAILED AS A RESULT OF VIBRATION AND/OR HEATING. THE VEHICLE WAS SUBSEQUENTLY DESTROYED BY RANGE SAFETY.</p> <p>CORRECTIVE ACTION-MOVE HEATSHIELD FORWARD 31 INCHES AND COAT AFT SIDE WITH FIBER GLASS. REMOVE ALL STRUCTURE AFT OF HEAT SHIELD EXCEPT MACELLES. REPLACE CRITICAL ALUMINUM PLUMBING WITH STAINLESS STEEL. HEAT SHIELD CHANGED TO STAINLESS STEEL INSTEAD OF ALUMINUM, AND INSTALLED ENGINE BOOTS.</p>						
AIRFRAME-A/B BOOSTER SECTION	EM3341-1.106.8P-1 BOLTS	CAPTIVE	SA 570913	1-1 10.41	YES NO	
<p>FAILURE MODE-OUT OF TOLERANCE. THE BOLTS THAT MOUNT THE GIMBAL JOINT ON THE MAIN STRUCTURE WERE FOUND TO BE UNDER TORGUED.</p> <p>SYSTEM EFFECT-NONE. BOOSTER ENGINE OPERATION SHUTDOWN DUE TO THE BE ACC SYSTEM ACTIVATING AS A RESULT OF THE LOOSELY MOUNTED GIMBAL.</p> <p>VEHICLE EFFECT-PREATURE PROPULSION SHUTDOWN.</p> <p>CORRECTIVE ACTION-THE BOLTS WERE TORQUED TO SPECIFICATIONS AND PERSONNEL DIRECTED TO USE LATEST CALIBRATED TORQUE WRENCHES.</p>						
AIRFRAME-A/B BOOSTER SECTION	ATPI-1.1A3 QUAD THREE BOOSTER SKIRT BULKHEAD RING	CAPTIVE	SA 570910	1-1	YES NO	
<p>FAILURE MODE-STRUCTURAL-POST TEST INVESTIGATION REVEALED THE BULKHEAD RING, AT THE AFT END OF THE BOOSTER SKIRT, IN QUAD THREE, WAS BURNED THROUGH.</p> <p>SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT.</p> <p>VEHICLE EFFECT-FIRE.</p> <p>CORRECTIVE ACTION-BULKHEAD WAS REPAIRED.</p>						
AIRFRAME-A/B BOOSTER SECTION	ZC-7-034-4A/P4-103-00-04 BOOSTER ENGINE BOOTS	FLIGHT	4A 570811	14	YES NO	
<p>FAILURE MODE-LEAK EXTERNAL. CONFIGURATION REQUIREMENTS DID NOT INCLUDE THE NEED FOR ENGINE BOOTS. THIS, COUPLED WITH THE CLOSE PROXIMITY OF THE HEAT SHIELD TO THE BOTTOM OF THE BOOSTER CHAMBERS AND TURBINE EXHAUST, ALLOWED THE RECALCULATION OF HOT GASES INTO THE THRUST SECTION.</p> <p>SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT IN THE THRUST SECTION WAS POSSIBLY DETRIMENTAL FOR COMPONENT OPERATION.</p>						

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# DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIF DATA SOURCE PART NUMBER	VEHICLE DATE DIF	SITE TIME DIF	PRI OTH	VENDOR NAME VENDOR PART NO
VEHICLE EFFECT-LOSS OF VEHICLE STABILITY. VEHICLE WAS DESTROYED BY RANGE SAFETY WHEN R2 THRUST DECREASED.						
CORRECTIVE ACTION-INSTALLED BOOTS, MOVED HEAT SHIELD FORWARD 31 INCHES, HEAT SHIELD MATERIAL CHANGED FROM ALUMINUM TO STAINLESS STEEL, TURBINE EXHAUST AND LUBE OIL DRAIN EXTENDED AND CANTED INTO FREE AIRSTREAM, SEAL ALL CORRUGATION 3 ON THRUST SECTION, AND CUT ENGINE NACELLES OFF AT STATION 1283.						
AIRFRAME-A/B BOOSTER SECTION	2C-7-200/P1-203-00-3 HEAT SHIELD	FLIGHT	38	9	YES NO	
FAILURE MODE-STRUCTURAL-A LUBE OIL FIRE IN QUADRANT IV WAS EVIDENT AT ABOUT 9 SECONDS. THE FIRE APPARENTLY RESULTED BECAUSE THE LUBE OIL DRAINS WERE ROUTED TO EXHAUST NEAR THE TURBINE EXHAUST.						
SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT- HEAT SHIELD CALORIMETER DATA INDICATED EXCESSIVE HEAT IMPINGEMENT DUE TO CONVECTION IN THE AREA OF THE TURBINE EXHAUST AND LUBE OIL DRAIN LINES.						
VEHICLE EFFECT-FIRE-THE FIRE APPARENTLY DID NOT CONTRIBUTE TO THE FLIGHT FAILURE WHICH RESULTED IN MISSILE BREAKUP AT 41 SECONDS BECAUSE OF THE LOSS OF STABILITY.						
CORRECTIVE ACTION-THE PORTION OF THE HEAT SHIELD PROTECTING THE ENGINE FAIRINGS WAS DOUBLED. THE BOOSTER AND SUSTAINER LUBE OIL DRAINS WERE RE-ROUTED TO DISCHARGE INTO THE BOOSTER TURBINE EXHAUST. THE ONE-PLY FIBERGLAS BOOTS WERE REPLACED WITH THREE-PLY FIBERGLAS BOOTS.						
AIRFRAME-A/B SUSTAINER SECTION	374-3-60-23	FLIGHT	7117 000419	PALCS-4 4.8	YES 50/C NO	
FAILURE MODE-OUT OF TOLERANCE, A 5 CPS-MAX 1.25 P-P - LONGITUDINAL LIFTOFF OSCILLATION WAS EXPERIENCED. THIS WAS THE HIGHEST AMPLITUDE RECORDED TO DATE ON AN SLV-3 BOOSTER.						
SYSTEM EFFECT-NONE-THE STRUCTURE WAS NOT COMPROMISED AND BULKHEAD DELTA PRESSURE REMAINED WELL WITHIN DESIGN LIMITS						
VEHICLE EFFECT-NONE.						
CORRECTIVE ACTION-OPEN-AN INVESTIGATION IS BEING PERFORMED TO DETERMINE THE SIGNIFICANCE OF THIS ANOMALY.						
AIRFRAME-A/B SUSTAINER SECTION	CT-LE-02-036 BOLTS	FAR 90-82024-081	1160 831203	OTHER	YES STANDARD PRESS NO ED STEEL	
FAILURE MODE-STRUCTURAL. BOLT FAILURE ORIGINATED AS A STRESS CORROSION MECHANISM. EXCESSIVE TORQUE ON BOLT WAS NOT A PRIMARY CAUSE FOR BOLT FAILURE. THERE IS NO WAY OF DETERMINING IF THE BOLTS HAD BEEN SUBJECTED TO RETORQUING BEFORE FAILURE OCCURRED.						
CORRECTIVE ACTION-NO MEANINGFUL CORRECTIVE ACTION IS APPLICABLE FOR THESE BOLT FAILURES DUE TO TOTAL LACK OF FAILURE HISTORY, UNKNOWN ENVIRONMENTAL EXPOSURE, POSSIBLE RETORQUING OR MISHANDLING DURING TIGHTING.						

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# DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIF DATA SOURCE PART NUMBER	VEHICLE DATE DIF	SITE TIME DIF	PRI OTH	VENDOR NAME VENDOR PART NO
AIRFRAME-A/B SUSTAINER SECTION	AA43-0021/P3-4BN-04-229	COMPOSITE-FRD/DPL 27-73007-133	2:50 850706	13	NO YES	NO CONVAIR
<p>FAILURE MODE-STRUCTURAL. DURING DPL SECURING OPERATIONS, AS THE FIRST MOVABLE DECK EAST WAS BEING EXTENDED, A BEND IN THE EXTENSION SYSTEM CAUSING THE DECK TO SKEW AND TEAR A 2 1/2 INCH HOLE IN THE FUEL TANK AT APPROXIMATELY STATION 1029.</p> <p>SYSTEM EFFECT-LOSS OF STRUCTURAL INTEGRITY.</p> <p>VEHICLE EFFECT-LOSS OF VEHICLE INTEGRITY.</p> <p>CORRECTIVE ACTION-SAN DIEGO WELDERS REPAIRED THE TEAR BY CLOSING THE TANK WITH A FUSION WELD AND ADDING A DOUBLER PLATE OVER THE AREA.</p>						
AIRFRAME-A/B SUSTAINER SECTION	GDC/BRF65-034 COVER PLATE OVER NON-USED AZUSA NO 69-72513-31 UNITING	COUNTDOWN	7107 850428	2-4	YES NO	
<p>FAILURE MODE-OUT OF TOLERANCE- COVER PLATE OVER THE NON USED AZUSA MOUNTING AT STATION 1133 MISSING.</p> <p>SYSTEM EFFECT-NONE.</p> <p>VEHICLE EFFECT-NONE - INSTALLATION OF COVER PLATE ACCOMPLISHED DURING NON WJC HOLD.</p> <p>CORRECTIVE ACTION-INSTALL COVER PLATE - EXISTING PAPER WORK IS SATISFACTORY TO ACCOMPLISH INSTALLATION OF THESE COVER PLATES IN THE FACTORY. REFERENCE SET OF STILL PHOTOGRAPHS TO BE USED BY INSPECTION DURING PRE LAUNCH CHECKS. INSPECTION AND TIGER TEAM PERSONNEL HAVE BEEN ALERTED TO THIS PROBLEM.</p>						
AIRFRAME-A/B SUSTAINER SECTION	CT-98-02-043 FUEL TANK - 1ST STAGE. CENTAUR	FAR 57-00002	1360 850302		NO YES	
<p>FAILURE MODE-STRUCTURAL. A FRAGMENT OF FUEL TANK STRUCTURE THAT ATTACHED DIRECTLY TO THE BOOSTER PRE- VALVE WAS EXAMINED AS A POSSIBLE CONTRIBUTION TO AC-5 MISSILE EXPLOSION. HALF OF THE BELL MOUTH WAS CONVOLUTED IN AN AFT DIRECTION, HALF WAS RIPPED AND FOLDED FORWARD. NO EVIDENCE WAS FOUND OF BLOCKAGE OF THE PORT BELLMOUTH PRIOR TO EXPLOSION. THIS IS SECONDARY TO ORIGINAL MISSILE EXPLOSION.</p> <p>CORRECTIVE ACTION-NONE. NO ACTION IS APPLICABLE TO THIS SECONDARY FAILURE.</p>						
AIRFRAME-A/B SUSTAINER SECTION	GO/C-BRF63-010/43-402-00-301 AIRFRAME	FLIGHT	301D 850302	A-3 49	NO NO	
<p>FAILURE MODE-OUT OF TOLERANCE. SHOCKS OF 10.5 DEGREES PER SECOND PEAK-TO-PEAK ON THE ROLL RATE GYRO AND OVER 11.4 G ON YOGIA OCCURRED AT 49.5 SEC. ADDITIONAL SHOCKS WERE NOTED ON THE RATE GYROS AT 53.5 SEC. AT THIS TIME THERE WAS A 10% INCREASE IN PROPELLANT TANK PRESSURES. THIS WAS BELIEVED DUE TO PARTIAL BULKHEAD REVERSAL DURING FLIGHT RESULTING FROM PNEUMATIC FAILURE.</p>						

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DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIP DATA SOURCE PART NUMBER	VEHICLE DATE DIP	SITE TIME DIP	PR1 OTM	VENDOR NAME VENDOR PART NO	
SYSTEM EFFECT-NONE, HOWEVER, IT IS BELIEVED THAT THE BULKHEAD PARTIALLY REVERSED. VEHICLE EFFECT-NONE. CORRECTIVE ACTION-NONE.							094773
AIRFRAME-A/B SUSTAINER SECTION	60/A-DN264-045/P6-LO-03-0AC4 RETROCKET FAIRING NOSE CAPS	FLIGHT	148D 641211	36A	YES NO	YES GO/C	093367
FAILURE MODE-STRUCTURAL. NOSE CAPS ON TWO OF EIGHT RETROCKET FAIRINGS WERE PARTIALLY DISLODGED DURING BOOSTER SECT TION JETTISON. ATTRIBUTED TO PRESSURE BLOWBACK CREATED DURING JETTISON. SYSTEM EFFECT-NONE. NOSE CAPS REMAINED SUFFICIENTLY IN POSITION TO PROTECT RETROCKETS FROM AERODYNAMIC HEATING. A LL EIGHT RETROCKETS FIRED AT THE PROPER TIME INDICATING THAT NO DAMAGE WAS CAUSED BY PARTIALLY DISLODGING NOSE CAP S. VEHICLE EFFECT-NONE. CORRECTIVE ACTION-NONE. SLIGHT MOVEMENT OF NOSE CAPS WAS NOT CONSIDERED DETRIMENTAL. REF-PROBLEM NUMBER 2, FLIGHT P ROBLEM REPORT 684-5-85-1.							096363
AIRFRAME-A/B SUSTAINER SECTION	A1-4MO-04-210 CAP	COMPOSITE-FRD/DPL	210D 641118	A-1	YES NO	YES	097716
FAILURE MODE-LEAK-EXTERNAL. FUEL WAS LEAKING FROM THE PRESSURE SENSE PORT ON THE SIDE OF THE MISSILE FUEL TANK. SYSTEM EFFECT-NONE. VEHICLE EFFECT-COMPOSITE DELAYED. CORRECTIVE ACTION-FUEL DETANKED AND SENSE PORT CAP WAS TIGHTENED.							097716
AIRFRAME-A/B SUSTAINER SECTION	CAP9AH1-041/P3-4MO-02-289	COMPOSITE-FRD/DPL	289D 641102	13	NO NO	NO	097716
FAILURE MODE-OUT OF TOLERANCE. POD TEMPERATURES INCREASED WHEN POD AIR CONDITIONER FAILED. SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT POD TEMPERATURE INCREASED. VEHICLE EFFECT-COUNTDOWN DELAYED. REQUIRED SHUTDOWN OF SYSTEMS OPERATING IN THE PODS. CORRECTIVE ACTION-DETANKED LOR AND REPAIRED AGE POD AIR CONDITIONER.							097716

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SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIF DATA SOURCE PART NUMBER	VEHICLE DATE DIF	SITE TIME DIF	PRI OTH	VENDOR NAME VENDOR PART NO	
AIRFRAME-A/B SUSTAINER SECTION	GDA-AP264-068/DI-801-00-36 RETRO-ROCKET	FLIGHT	38F 640631	D1 322	YES NO	YES ROCKET PMR INC	893886
<p>FAILURE MODE-STRUCTURAL. DURING RETRO ROCKET FIRING THE 82 POD RETRO-ROCKET(S) EXPLODED.</p> <p>SYSTEM EFFECT-EXPLOSION. EXPLOSION OF THE RETRO-ROCKET(S) CAUSED RUPTURE AND FRAGMENTATION OF THE LOX TANK STRUCTURE.</p> <p>VEHICLE EFFECT-LOSS OF VEHICLE INTEGRITY. LOX TANK STRUCTURE WAS LOST HOWEVER, THERE WAS NO EFFECT ON REENTRY VEHICLE IMPACTING THE TARGET AREA.</p> <p>CORRECTIVE ACTION-NONE. HOWEVER, POST TEST ANALYSIS OF X-RAYS TAKEN OF THESE RETRO-ROCKETS REVEALED A POSSIBLE CRACK IN THE GRAIN STRUCTURE ON ONE OF THE RETRO ROCKETS.</p>							
AIRFRAME-A/B SUSTAINER SECTION	LV-98-02-030C EQUIPMENT POD DOOR HINGE	FAR 7-75840-7	250D 640721	ETR	YES NO	YES 60/FT. WORTH	898474
<p>FAILURE MODE-STRUCTURAL- HINGE FOUND BROKEN. HINGE WAS FROM POD DOOR ADJACENT TO POD ANTENNA. HINGE IS MADE OF 7075 -T6 BAR.</p> <p>CORRECTIVE ACTION-NONE- PART WAS NOT RECEIVED FOR ANALYSIS.</p>							
AIRFRAME-A/B SUSTAINER SECTION	GDA/BK64-016/L3-401-00-331 A-RFRAME	FLIGHT	351D 640423	2-3 264	YES NO		891335
<p>FAILURE MODE-OUT OF SPECIFICATION OR TOLERANCE. 120 CPS LONGITUDINAL OSCILLATIONS WERE NOTED DURING THE LATTER PART OF SUSTAINER PHASE.</p> <p>SYSTEM EFFECT-NONE. IT IS SPECULATED THAT THE 120 CPS OSCILLATIONS ORIGINATED IN THE SUSTAINER ENGINE AND MAY HAVE CAUSED DAMAGE TO THE SUSTAINER THRUST CHAMBER ENGINE OPERATION WAS BELOW NORMAL IN PERFORMANCE THROUGHOUT FLIGHT.</p> <p>VEHICLE EFFECT-NONE.</p>							
CORRECTIVE ACTION-NONE-CORRECTIVE ACTION TAKEN.							
AIRFRAME-A/B SUSTAINER SECTION	A-JA-02-038F BOSS ASSEMBLY	FAR 27-78139-801	283D 630211		YES NO		
<p>FAILURE MODE-OUT OF TOLERANCE-THE LOX TANK GROUND PRESSURIZATION MALE PLUG WOULD NOT SEAT INTO THE 27-78008-9 BOSS, BECAUSE BOSS THREADS WERE 0.014 OUT OF CONCENTRICITY REQUIREMENTS.</p> <p>CORRECTIVE ACTION-CONFIRMED. THE PRODUCTION PLANNING SHEET NOW COMPLIES WITH 27-78008 (REV. E) WHICH SPECIFIES THE</p>							

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SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIP DATA SOURCE PART NUMBER	VEHICLE DATE DIP	SITE TIME DIP	PRI OTH	VENDOR NAME VENDOR PART NO
ALLOWABLE 0.003 INCH T.I.R. FOR CONCENTRICITY. EFFECTIVITY WAS 4/1/65 PER S.C. LETTER ANSWERING RAR A-JA-02-3806.						
AIRFRAME-A/B SUSTAINER SECTION	A-99-02-035C POD WIRING BEAM	FAR 7-73233	021205	FACTORY	YES NO	099315 099317
FAILURE MODE-STRUCTURAL-POD BEAM FILLER MATERIAL CRACKED AT INSTALLATION.						
CORRECTIVE ACTION-NONE-NOT RECEIVED FOR ANALYSIS. PART REPAIR IN THE FACTORY. ANALYSIS CANCELLED.						
AIRFRAME-A/B SUSTAINER SECTION	A0J62-0114/PI-801-00-21 RETROCKET	FLIGHT	21F 021203	11 328	YES ATLANTIC RESEA NO RCH CORP	099208
FAILURE MODE-FAIL DURING OPERATION. RETROCKET LOCATED IN V1 VERNIER FAIRING FAILED TO CONTRIBUTE TO RETROTHRUST WHEN FIRING SIGNAL GIVEN AS EVIDENCED BY LOWER THAN NORMAL TOTAL RETROTHRUST EXPECTED FROM TOTAL OF 4 ROCKETS. PROBABLY IGNITED BUT BLEW OUT AFT END OF ROCKET AND FLAMED OUT AFTER DAMAGING WIRING NEARBY.						
SYSTEM EFFECT-OPERATION TOO LOW. ONE RETROCKET FAILED TO OPERATE AS SUCH. EVIDENCE OF NO RETROTHRUST FROM THIS ROCKET. ALSO EVIDENCE OF FIRING THROUGH BASE PLUG OF RETROCKET THUS DAMAGING INSTRUMENTATION WIRING AFT OF ROCKET IN V1 VERNIER FAIRING. TOTAL RETROTHRUST LOWER THEN DESIGN.						
VEHICLE EFFECT-NONE. SIX ITEMS OF INSTRUMENTATION LOST. MISSION SUCCESSFUL.						
CORRECTIVE ACTION-NONE.						
AIRFRAME-A/B SUSTAINER SECTION	A-99-02-035C POD WIRING BEAM	FAR 7-73233	021203	FACTORY	YES ELDON FIBERGLAS NO S	099276
FAILURE MODE-STRUCTURAL. POD BEAM FILLER MATERIAL CRACKED AT INSTALLATION. PART WAS NOT RECEIVED FOR ANALYSIS.						
CORRECTIVE ACTION-NONE. THE BEAM WAS REPAIRED IN THE FACTORY.						
AIRFRAME-A/B SUSTAINER SECTION	SP-99-02-039F POD WIRING BEAM	FAR 7-73234-004	021203	FACTORY	YES ELDON FIBERGLAS NO S	
FAILURE MODE-STRUCTURAL-BEAM WAS CRACKED WITH ONE TIP DETACHED. BEAM WAS WEAK AT AREA ADJACENT TO NUTS AS A RESULT OF EPOXY FILLER ONLY PARTIALLY SURROUNDING NUTS.						
CORRECTIVE ACTION-CONFIRMED. 1. RAR A-99-023603 AND 3803-1 ISSUED TO IMPROVE VENDOR QUALITY. VENDOR DID NOT ASSUME RESPONSIBILITY FOR THE CELLS AROUND THE NUT BEING FILLED WITH EPOXY. 2. GO/A ECM 194893 OF 7/28/63 REVISED GO/A DRAWINGS TO ENLARGE THE HOLE (FROM 0.830 TO 0.680 INCH) AROUND THE NUT SO THAT THE SURROUNDING CELLS WILL BE SEVERED THU						

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SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIP DATA SOURCE PART NUMBER	VEHICLE DATE DIP	SITE TIME DIP	PRI OTH	VENDOR NAME VENDOR PART NO	
3 ALLOWING ADEQUATE EPOXY FILL TO SECURE THE NUT.							090310
AIRFRAME-A/B SUSTAINER SECTION	A-99-02-036F POD WIRING BEAM	FAR 7-73233	621203	FACTORY	YES	ELDON FIBERGLA NO 33	090300
FAILURE MODE-STRUCTURAL. POD BEAM FILLER MATERIAL CRACKED AT INSTALLATION. ONE NUT HAD BROKEN LOOSE FROM THE ASSEMBLY. EPOXY HAD BROKEN AWAY FROM TWO SIDES OF THE NUT. NUTS ARE RETAINED ON ALL 8 SIDES BY EPOXY FILLER. EPOXY FILLER HAD ONLY PARTIALLY SURROUNDED THE NUT.							
CORRECTIVE ACTION-RARS A-99-02-3603 AND 3603-1 WERE ISSUED TO IMPROVE VENDOR QUALITY. ECN 194885 OF JULY 26, 1963 ENLARGED FIBERGLASS NUT HOLE SIZE FROM 0.530 TO 0.620 TO ALLOW BETTER BOND TO THE NUT, ASSURING THAT ALL VOIDS AROUND THE NUT ARE FILLED WITH FILLER.							
AIRFRAME-A/B SUSTAINER SECTION	A-99-02-036F POD WIRING BEAM	FAR 7-73233	621202	FACTORY	YES	ELDON FIBERGLA NO 33	090310
FAILURE MODE-STRUCTURAL-POD BEAM EPOXY FILLER MATERIAL FOUND BROKEN ON TWO SIDES OF A HEX NUT WHICH ALLOWED NUT TO FREE ITSELF FROM THE PART. THIS WAS CAUSED BY THE EPOXY FILLER ONLY PARTIALLY SURROUNDING THE NUT, THUS RESULTING IN VOIDS DURING MANUFACTURE.							
CORRECTIVE ACTION-CONFIRMED. RARS A-99-02-3603 AND 3603-1 WERE ISSUED TO OBTAIN VENDOR IMPROVEMENTS. VENDOR DID NOT TAKE RESPONSIBILITY FOR THE CELLS AROUND THE NUT BEING FILLED WITH EPOXY. GO/A CHANGED DRAWINGS TO ENLARGE HOLES FROM 0.530 TO 0.620 INCH AROUND NUT, SO SURROUNDING CELLS WOULD BE DEVERED THUS ALLOWING FILL BY EPOXY. CHANGE WAS E.C. N. 194885 RELEASED 7/26/63.							
AIRFRAME-A/B SUSTAINER SECTION	AC-63-0001/92-603-88-75 SUSTAINER BOOT	CAPTIVE	75F 621126	32 D	NO NO	GO/C	090317
FAILURE MODE-STRUCTURAL-A MAJOR PRESSURE PULSE OCCURRED AT ENGINE START WHICH DAMAGED THE SUSTAINER BOOT AND RETAINING CLIPS.							
SYSTEM EFFECT-LOSS OF STRUCTURAL INTEGRITY. MINOR DAMAGE TO SUSTAINER BOOT AND RETAINING CLIPS, AND ELONGATED BOLT HOLES IN THE QUAD 3/4 RISE OFF PANEL BRACKET.							
VEHICLE EFFECT-NONE.-LINE SHROUD LEAKS IN THE TRUNNION GARNET.							
CORRECTIVE ACTION-THE BOOSTER ENGINE NET START TECHNIQUE TO BE UTILIZED TO ELIMINATE MAJOR PRESSURE PULSE. RETAINING 6 CLIPS REPLACED AND BOOT REPAIRED.							

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SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIF DATA SOURCE PART NUMBER	VEHICLE DATE DIF	SITE TIME DIF	PRI OTH	VENDOR NAME VENDOR PART NO	
AIRFRAME-A/B SUSTAINER SECTION	A0J82-0070/A1-401-00-199 RETROCKET	FLIGHT	199D 821028	576A-1 300.86	YES NO		996091
FAILURE MODE-STRUCTURAL. SUSTAINER TANK DESTROYED AS RESULT OF RETROCKET BLAST IMPINGEMENT ON TANK SKIN IN B2 POD AREA. THE RETROCKET IN THE B2 POD EITHER EXPLODED OR MORE PROBABLY, BLEW OUT THROUGH BASE OF ROCKET DURING FIRING.							
SYSTEM EFFECT-LOSS OF STRUCTURAL INTEGRITY. SUSTAINER TANK SKIN PUNCTURED IN B2 POD AREA BY FAULTY FIRING OF RETROCKET THUS DAMAGING TANK SKIN AND ALSO BURNING WIRING IN SAME AREA.							
VEHICLE EFFECT-IMMEDIATE LESTRUTION. TARGET VEHICLE DEPLOYMENT DISTURBED WITH EXCESSIVE TUMBLING REPORTED BY CONTRACTOR.							
CORRECTIVE ACTION-FIBERGLASS BAFFLING TO DEFLECT RETROCKET EXHAUST GASES FROM POD AND ELECTRICAL WIRING AREA.							
AIRFRAME-A/B SUSTAINER SECTION	A-9R-02-02TC FUEL TANK, MISSILE	FAR 27-73008	90F 821020		YES NO		899303
FAILURE MODE-LEAK-EXTERNAL-TANK LEAKAGE NEAR FUEL TANK PRE-SURIZATION LINE. NO ANALYSIS WAS MADE.							
CORRECTIVE ACTION-NONE-NO ANALYSIS WAS MADE. PART REPAIRED BY WELDING AT THE SITE.							
AIRFRAME-A/B SUSTAINER SECTION	HC-99-02-024P MISSILE BASIC TANK	FAR 27-73008-509	152D 820928	FACTORY	YES NO		899300
FAILURE MODE-STRUCTURAL-LEAKAGE AT TEN SPOTWELDS (9 WERE ADJACENT) AT STA 887, QUAD 3 AND 4 DURING HYDROSTATIC LEAK CHECKS. X-RAY INSPECTION REVEALED 33 ADDITIONAL CRACK INDICATIONS. METALLURGICAL INSPECTION CONFIRMED THE FAILURE. CRACK PENETRATION OF PARENT METAL WAS COMPLETE. ABSOLUTE IDENTIFICATION OF CAUSE OF FAILURE NOT POSSIBLE BECAUSE OF MANY TECHNICAL CONSIDERATIONS PLUS THE ELAPSED TIME SINCE INITIAL WELDING AT THIS STATION.							
CORRECTIVE ACTION-COMFIRMED BY METALLURGICAL INSPECTION. A DIAGNOSTIC TEAM, CODE HC-98-08-301, UNDER DIRECTION OF FAILURE ANALYSIS GROUP WAS ESTABLISHED TO DETERMINE CAUSE OF FAILURE. NO ADDITIONAL DOCUMENTARY ACTION IS NOTED ON THIS FAR. HOWEVER AUTHOR OF THE FAR, J.N. BRUCKER HAS STATED VERBALLY THAT FAILED AREA OF TANK SKIN WAS REPLACED AND PASSED INSPECTION.							
AIRFRAME-A/B SUSTAINER SECTION	A-9P-02-023F THRUST COME ASSEMBLY SEALANT	FAR 27-72100-821	27F 820913		YES NO	MAGNA MILLS PR CO AF04-647-307	
FAILURE MODE-LEAK-EXTERNAL-LEAKAGE OF RP-1 FUEL AROUND THE 8 BOLTS ATTACHING THE 27-72883 THRUST COME CAP TO THE CO ME ASSEMBLY. THE POROSITY WHICH EXISTED IN THE SEALANT COVERING THE CAP, COULD HAVE CAUSED THE LEAKAGE. SEALANT MIXTURE AND PREPARATION WAS NOT PER SPECIFICATION. HEAVY POROSITY EXISTED.							



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SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIF DATA SOURCE PART NUMBER	VEHICLE DATE DIF	DATE TIME DIF	PRI OTH	VENDOR NAME VENDOR PART NO	
							000301
	CORRECTIVE ACTION-1. RAR A-9P-02-3602 REQUESTED MFG AND Q.C. PERSONNEL TO FULLY FOLLOW SPECIFICATION M.S. 21-08A WHICH CONTROLS SEALANT MIXING. VENDOR REPLY TO UCAR 4293, RECEIVED 2/27/83, STATES THAT ALL PARTS ON NEW PURCHASE WILL BE INSPECTED TO PRECLUDE RECURRENCE OF PROBLEM.						
AIRFRAME-A/B SUSTAINER SECTION	A-9L-02-021F INSTRUMENTATION PLUG SEAL	FAR 27-72801-15	4TF 620819		YES NO		000009
	FAILURE MODE-STRUCTURAL-LEAKAGE AROUND THE PLUG WAS CAUSED BY A TORUSAL THAT WAS DAMAGED BY BEING CRACKED WHEN PLUG WAS TORQUED INTO THE TANK. TORUSAL WAS NICKED IN TWO PLACES 180 DEGREES APART, ON OPPOSITE SIDES. TECH ORDERS DO NOT CONTAIN ANY INSTRUCTIONS REGARDING CORRECT PLUG INSTALLATION PROCEDURE. NOTE 2 OF DRAWING REQUIRES 35 FOOT-POUND OF TORQUE AND TO HOLD FITTING WITH A WRENCH TO PREVENT TORQUING WELD JOINT BETWEEN FITTING AND TANK.						
	CORRECTIVE ACTION-NO TORUSAL ACTION IS REQUIRED. NOTE 2 ON DRAWING 27-73139 WAS INCORPORATED IN T. O. 21-5W85F-2-1 B, T. O. 5W65E-2-1B AND OTHER APPLICABLE T. O. ON 2/20/83 AS CHANGE 1-4.						
AIRFRAME-A/B SUSTAINER SECTION	A-9L-02-023F INSTRUMENTATION PICKUP PLUG	FAR 27-72805-13	4TF 620819		NO NO		000209
	FAILURE MODE-LEAK-EXTERNAL-LEAKED AROUND PLUG. ANALYSIS DETERMINED THAT PLUG WAS SATISFACTORY, AND MISTAKENLY SENT TO ANALYSIS. AN ADJACENT PLUG 27-72805-13 WAS FAULTY, AND IT WAS REPORTED PREVIOUSLY IN FAR-A-9L-02-021.						
	CORRECTIVE ACTION-NOT CONFIRMED. NO ACTION TO BE TAKEN.						
AIRFRAME-A/B SUSTAINER SECTION	AC-82-0033/52-002-A3-73 SUSTAINER THRUST CHAMBER BOOT	CARTIVE 27-77014-1	73F 82D803	82	YES NO	CO/C	000021
	FAILURE MODE-FAIL DURING OPERATION. POST TEST INSPECTION REVEALED THAT THE BOOT MOVED ABOVE 3 OF THE RETAINING LUGS IN QUAD 1 AND 2 DURING THE TEST.						
	SYSTEM EFFECT-NONE.						
	VEHICLE EFFECT-NONE.						
	CORRECTIVE ACTION-BOOT REPAIRED.						
AIRFRAME-A/B SUSTAINER SECTION	A-90-02-018F RETRO ROCKET COVER	FAR 27-72176-20	87C 820713	WTR	YES NO	ELDON FIBERGLA NO 33	
	FAILURE MODE-STRUCTURAL. THE COVER SNAPPED OFF FROM THE FAIRING ASSEMBLY AT LAUNCH DUE TO EITHER IMPROPER ADJUSTMENT OF -31 CATCHES BY THE VENDOR, OR BY PRIOR REMOVAL AND REPLACEMENT OF COVER BY GO/A PERSONNEL CAUSING INCORRECT CA						

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SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIP DATA SOURCE PART NUMBER	VEHICLE DATE DIP	SITE TIME DIP	PRI OTH	VENDOR NAME VENDOR PART NO
TCH ADJUSTMENT. COVER WAS FOUND WARPED AND BENT. THIS WAS ATTRIBUTED TO DAMAGE BY FALL AT LAUNCH.						
CORRECTIVE ACTION-1. VENDOR WAS INFORMED OF FAILURE CAUSE AND REQUESTED TO ASSURE THAT CATCHES ARE PROPERLY ADJUSTED. (RAC A-90-02-612). PARTS IN VENDOR STOCK WERE CHECKED AND INSPECTION SEALS ADDED. (VCA 1818-62 OF 9/5/62). 2. ALL COVERS IN GO/A CUSTODY WERE CHECKED FOR PROPER ADJUSTMENT AND INSTALLATION PER SURVEY 107-62 ON 8/26/62. AN INSPECTION DECAL WAS PLACED ON COVER OVERLAPPING ADJACENT STRUCTURE.						
AIRFRAME-A/B SUSTAINER SECTION	A-90-02-015 INSTRUMENTATION PICKUP PLUG	FAR 27-72805-13	57F 620703	WTR	YES NO	
FAILURE MODE-LEAK-EXTERNAL-AROUND PROPELLANT TANK PLUG CAUSED BY ECCENTRIC THREADS (IMPROPER MACHINING), THUS PREVENTING O RING SEAL.						
CORRECTIVE ACTION-(1.) RECOMMENDED THAT VENDOR INSPECTION AND MACHINING TECHNIQUES BE REVIEWED. (DOCUMENTED BY FAR A-90-02-611). (2.) GO/A PURGED STOCK AND REJECTED ALL DISCREPANT PARTS. ECH 25030 CHANGED DRAWING TO REFLECT THREAD AND PITCH TOLERANCES. (3.) GO/A TRANS- MITTED THIS DATA TO SUPPORT PUBLICATIONS DEPT TO ASSURE TECHNICAL ORDER COMPLETIBILITY.						
AIRFRAME-A/B SUSTAINER SECTION	AE62-0352/32-001-A1-59	CAPTIVE	59F 020424	3-2 4.71	NO YES	
FAILURE MODE-OUT OF TOLERANCE. PI101. SUSTAINER ENGINE ENVIRONMENT TEMPERATURE, SURPASSED IT UPPER REDLINE VALUE OF 250 DGF.						
SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT. PI101 INDICATED 49 DGF AT IGNITION, 250 DGF AT PLUS 3.93 SECONDS AND 313 DGF AT CUTOFF.						
VEHICLE EFFECT-PRE-MATURE MIORULSION CUTOFF. THE TEST WAS TERMINATED WHEN THE TEMPERATURE EXCEEDED THE REDLINE LIMIT.						
CORRECTIVE ACTION-THE PRIMARY FAILURE, WHICH WAS DUE TO AN IMPROPERLY TORQUED B-NUT ON THE SUSTAINER ENGINE HYPERGOLIC CARTRIDGE CONTAINER DISCHARGE PORT, WAS CORRECTED. THE CARTRIDGE WAS SUBSEQUENTLY REPLACED.						
AIRFRAME-A/B SUSTAINER SECTION	AA62-0074/P1-6DN-01-07 APEX CONE FLANGE, SEAL	COMPOSITE-FRD/DPL 27-72510-7	7F 620124	11	YES NO	
FAILURE MODE-LEAK-EXTERNAL. KEEPING FUEL LEAK FOUND AT APEX CONE FLANGE AFTER TANKING TEST. PROBLEM ATTRIBUTED TO BAD SEAL. EXCESSIVE LUBRICANT FOUND ON SEAL.						
SYSTEM EFFECT-NONE.						
VEHICLE EFFECT-NONE. TANKING TEST WAS RESCHEDULED FOR ANOTHER REASON.						

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SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIF DATA SOURCE PART NUMBER	VEHICLE DATE FIP	SITE TIME DIF	PRI OTH	VENDOR NAME VENDOR PART NO	
CORRECTIVE ACTION-SEAL WAS REPLACED, WHICH REQUIRED LOWERING SUSTAINER ENGINE AND APEX CONE.							094083
AIRFRAME-A/B SUSTAINER SECTION	AA62-0009 INSULATION-BULKHEAD	COUNTDOWN 27-73007-028	1210 020109	12 10	YES NO		095926
FAILURE MODE-STRUCTURAL. A CRACKED NON-STRUCTURAL ALUMINUM SHELL INSULATION BULKHEAD WAS DISCOVERED ON FIRST X-1 DA Y.							
SYSTEM EFFECT-LOSS OF STRUCTURAL INTEGRITY.							
VEHICLE EFFECT-COUNTDOWN RESCHEDULED. INSULATION BULKHEAD REMOVAL WAS COMPLETED IN ABOUT 48 HOURS.							
CORRECTIVE ACTION-REMOVED INSULATION BULKHEAD. (PPAR-A1219)							
AIRFRAME-A/B SUSTAINER SECTION	AE61-0799/ ARMA POD AFT BULKHEAD	FLIGHT 4F 61122	11 YES	10 YES			097432
FAILURE MODE-FAILED TO OPERATE AT PRESCRIBED TIME. FAILURE OF UNILICAL PLUG GOOD TO EJECT EITHER ELECTRICALLY OR BY LAUNCH CAUSED SEVERE DEFORMATION OF ARMA POD AFT BULKHEAD WHEN UNILICAL CABLE TIGHTENED DURING MISSILE RISE-OFF.							
SYSTEM EFFECT-LOSS OF STRUCTURAL INTEGRITY. ARMA POD AFT BULKHEAD WAS PULLED AWAY FROM POD BODY AS VEHICLE LIFTED OFF. BULKHEAD APPEARED TO RECOVER TO NORMAL POSITION AFTER UNILICAL RELEASED.							
VEHICLE EFFECT-NONE. NO ABNORMALITIES NOTED DURING FLIGHT WERE ATTRIBUTED TO THE DAMAGE INCURRED BY THE POD.							
CORRECTIVE ACTION-UNKNOWN.							
AIRFRAME-A/B SUSTAINER SECTION	CT-98-02-001F FITTING-DISCONNECT, STAGING	FAR 27-73520-1	1040 611024	36 NO	YES NO		099350
FAILURE MODE-STRUCTURAL. SEVERE CORROSION FROM ENTRAPPED WATER DUE TO INADEQUATE PROVISION FOR DRAINING WATER. MISS ILE HAD BEEN AT ETR FOR MONTHS-HOST OF THIS IN THE SERVICE TOWER. THE ONE SECTION OF THE FITTING THAT HAD A DRAIN HO LE HAD ALMOST NO CORROSION.							
CORRECTIVE ACTION-1. 50/C INITIATED A DESIGN STUDY TO CONSIDER ADDITIONAL DRAIN HOLES. 2. ON OCT 4-1962 A DRAWING C HANGE WAS MADE ON 27-73520 CREATING -5, THE SAME AS -1 EXCEPT FOR AN IMPROVED FINISH. THE SAME CHANGE WAS ALSO MADE ON THE OPPOSITE PART, 27-73519. 3. THIS DATA WAS TRANSMITTED FOR USE IN APPLICABLE TECHNICAL ORDERS.							
AIRFRAME-A/B SUSTAINER SECTION	AA61-0103/P6-4CNO-05-104/CB TORO SEAL FLANGE	COMPOSITE-FRD/DPL 1040 610904	36A -6100	YES NO			
FAILURE MODE-LEAK-EXTERNAL. A FUEL LEAK OCCURRED AT THE POD 1 TORO SEAL FLANGE DURING SEQUENCE 11 PRESSURIZATION.							

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SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIP DATA SOURCE PART NUMBER	VEHICLE DATE DIP	SITE TIME DIP	PRI OTH	VENDOR NAME VENDOR PART NO
SYSTEM EFFECT-NONE. THE FUEL WAS DRIPPING ON THE MAIN MISSILE BATTERY.						
VEHICLE EFFECT-COUNTDOWN DELAYED. HOLD TIME 130 MINUTES.						
CORRECTIVE ACTION-STOPPED LEAK WITH A PUTTY PATCH.						
AIRFRAME-A/B SUSTAINER SECTION	AE61-0842P3-501-00-22 VERNIER 2 FAIRING	FLIGHT	22C 610706	13 47.	YES NO	
FAILURE MODE-OUT OF EXPECTED TEST VALUE. THE TEMPERATURE OF THE AFT SURFACE OF THE VERNIER 2 FAIRING ROSE TO 1136 DEG F. STARTING AT 47 SECONDS AND REACHING THE HIGHEST POINT AT 106 SECONDS. TEMPERATURES INSIDE THE FAIRING ALSO ROSE TO APPROX 600 DEG F. IN A SIMILAR MANNER.						
SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT. THE HIGH TEMPERATURE WAS APPARENTLY A RESULT OF SHOCK CONDITIONS OFF THE CLAMHELL OR STAGNATION TEMPERATURES AT THE FORWARD SIDE OF THE VERNIER ENGINE POST. THIS HOT AIR ALSO APPEARED TO ENTER THE FAIRING AND FLOW OUT THE AFT END.						
VEHICLE EFFECT-NONE. NO EFFECT UPON VEHICLE.						
CORRECTIVE ACTION-A CHANGE HAS BEEN MADE IN THE SEAL AROUND THE VERNIER ENGINE POST TO PREVENT HOT AIR FLOW THRU THE FAIRING. CHANGE WILL BE EFFECTIVE FOR 32E AND ON.						
AIRFRAME-A/B SUSTAINER SECTION	AE60-0956/P3-501-00-0P VERNIER ENGINE 1/2Z/ MACELLE	FLIGHT	2E 610224	13 150	YES NO	
FAILURE MODE-OUT OF EXPECTED TEST VALUE-AMBIENT TEMPERATURE WITHIN THE V2 VERNIER ENGINE FAIRING (MACELLE) REACHED A MAXIMUM OF 937 DEGREES F AT 150 SECONDS DUE TO INADEQUATE PROTECTION FROM HIGH VELOCITY AIRSTREAM.						
SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT- TELEMETRY DATA INDICATED THAT V2 VERNIER ENGINE UNFUELED ONE DEGREE IN PITCH. THIS INDICATION WAS ATTRIBUTED TO AERODYNAMIC HEATING OF EITHER THE TELEMETRY TRANSDUCER ON THE FEEDBACK TRANSDUCER LOCATED WITHIN THE VERNIER FAIRING.						
VEHICLE EFFECT-NONE. THE INDICATED DRIFT HAD NO APPARENT EFFECT ON VEHICLE PERFORMANCE. THE RE-ENTRY VEHICLE IMPACTED IN THE PLANNED TARGET AREA.						
CORRECTIVE ACTION-FUTURE VEHICLES WILL HAVE PRODUCTION TYPE COVER PLATES OVER THE VERNIER PITCH CLAMHELL FAIRING CLEARANCE CUTOUTS TO DECREASE AERODYNAMIC IMPINGEMENT INSIDE THE FAIRING WHILE THE VERNIERS ARE AT THE FITCHOVER POST FLOW.						
AIRFRAME-A/B SUSTAINER SECTION	90-02-009 LATCH FITTING, A16 POD DOOR	FAIR	60D 610219	ETR	YES NO	
FAILURE MODE-STRUCTURAL-POD COVER LATCH FITTING CENTER LUG WAS BROKEN DUE TO OVERSTRESSING. THE INHERENT FLEXIBILITY OF THE COVER, WITH MISSILE HORIZONTAL, CONTRIBUTED TO LATCH MISALIGNMENT. FAILURE TO ASSURE PROPER ALIGNMENT, REPEATABLE, PROBABLY CAUSED THE FAILURE. ALSO COVERED ON PAR 16 -18 AND -17.						

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SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIF DATA SOURCE PART NUMBER	VEHICLE DATE DIF	SITE TIME DIF	PRI OTH	VENDOR NAME VENDOR PART NO
CORRECTIVE ACTION-CONVAIR INSTRUCTED PERSONNEL TO ASSURE LATCH ALIGNMENT DURING OPERATION. FITTINGS ARE REINSPECTED IN FINAL INSPECTION FOR ALIGNMENT.						
AIRFRAME-A/D SUSTAINER SECTION	98-02-009 LATCH FITTING, AIG POD DOOR	FAR 27-72911-13	800 810215	ETI	YES NO	
FAILURE MODE-STRUCTURAL-POD COVER LATCH FITTING CENTER LUG WAS BROKEN DUE TO OVERSTRESSING. THE INHERENT FLEXIBILITY OF THE COVER, WITH MISSILE HORIZONTAL, CONTRIBUTED TO LATCH MISALIGNMENT. FAILURE TO ASSURE PROPER ALIGNMENT, REPEATABLY, PROBABLY CAUSED THE FAILURE. ALSO COVERED ON FAR 18 -15 AND -17.						
CORRECTIVE ACTION-CONVAIR INSTRUCTED PERSONNEL TO ASSURE LATCH ALIGNMENT DURING OPERATION. FITTINGS ARE REINSPECTED IN FINAL INSPECTION FOR ALIGNMENT.						
AIRFRAME-A/B SUSTAINER SECTION	98-02-011 STRAP ASSEMBLY-CANISTER	FAR 27-72424-1	13E 810213	ETR	YES NO	
FAILURE MODE-STRUCTURAL-CANISTER STRAP FAILED WHEN CANISTER WAS REMOVED FOR THE FIRST TIME. CANISTER WAS CORRODED & TRAP WAS NOT. THE PROTECTIVE COATING ON THE CANISTER WAS BROKEN DURING INSTALLATION. MOISTURE FROM THE AIR-CONDITIONING SYSTEM COLLECTED AND DROPS ON CANISTER AND ON CLAMP'S STARTING CORROSION.						
CORRECTIVE ACTION-DRAWINGS 27-81012 AND 27-81052 WILL BE REVISED TO APPLY ALSOAR GREASE TO THE INSIDE OF CANISTER & TRAPS- ONLY THE CAN/STEP SADDLE AREA IS REQUIRED TO BE LUBRICATED NOW.						
AIRFRAME-A/B SUSTAINER SECTION	AC-91-0085/52-50E-A2-00 SUSTAINER BOOT	CAPTIVE	GE 810201	52 40	YES NO	60/C
FAILURE MODE-STRUCTURAL-A SMALL TEAR IN THE SUSTAINER RADIATION BOOT WAS NOTED DURING POST TEST VISUAL INSPECTION.						
SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT-HIGH TEMPERATURE ENVIRONMENT IN THE SUSTAINER COMPARTMENT. SUSTAINER ENGINE AMBIENT TEMPERATURE (P1325T) ROSE TO 138 DEGREES F. AT 4.1 SECONDS.						
VEHICLE EFFECT-NONE.						
CORRECTIVE ACTION-REPAIR BOOT.						
AIRFRAME-A/D SUSTAINER SECTION	AE90-0955/P3-503-00-06 VERNIER FAIRING	FLIGHT	RE 810124	13 11.3	YES NO	
FAILURE MODE-STRUCTURAL. A CUTOUT IN THE VERNIER CLAMSHELL FAIRING ALLOWED AERODYNAMIC HEATING OF THE V2 PITCH SERV O VALVE WIRING WITH RESULTANT SHORTCUT. DUE TO E/P SERIES ENGINE TORQUE THE VERNIER ENGINES MOVED TO A POSITION SUCH						

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AS TO EXPOSE THE FAIRING. CUTOUT.						
SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT.						
VEHICLE EFFECT-LOSS OF VEHICLE STABILITY. VEHICLE STABILITY WAS LOST AFTER BOOSTER CUTOFF. STABILITY LOST AT 160.9 SECONDS WITH SUSTAINER SHUTDOWN AT 247.7 SECONDS.						
CORRECTIVE ACTION-INSTALL CURRENT LIMITING RESISTORS IN VERNIER CIRCUITRY. ADDED PROTECTIVE COVER TO VERNIER ENGINE . REVISED VERNIER WIRING INSULATION TO COVER THE VERNIER VALVE AND CONNECTOR.						
AIRFRAME-A/D SUSTAINER SECTION	AE60-0352/P2-402-00-91 LOX TANK	FLIGHT	SID 601215	12 67	NO YES	NO CONVAIR
FAILURE MODE-STRUCTURAL. FAILURE OF THE MISSILE LOX TANK DUE TO FRAGMENTS FALLING FROM THE UPPER STAGE. FRAGMENTS WERE MOST LIKELY FROM THE BLAST BAND WHICH FAILED DUE TO EITHER BAND FLUTTER OR OVER PRESSURIZATION.						
SYSTEM EFFECT-LOSS OF STRUCTURAL INTEGRITY. LOX TANK PRESSURE DECREASE TO 0 PSI WHEN THE TANK RUPTURED AND 40,000 POUNDS LOX FLASHED TO ATMOSPHERE.						
VEHICLE EFFECT-LOSS OF VEHICLE INTEGRITY. SIX SECONDS AFTER THE TANK RUPTURED, THE MISSILE EXPLODED.						
CORRECTIVE ACTION-NONE.						
AIRFRAME-A/D SUSTAINER SECTION	AC-60-0050/31-311-A7-03 SUST. THRUST CHAMBER BOOT	CAPTIVE 27-77011-1	SE 601125	31	YES NO	YES 60/C
FAILURE MODE-STRUCTURAL. SUSTAINER BOOT WAS DAMAGED DURING ENGINE OPERATION.						
SYSTEM EFFECT-NONE. THRUST SECTION INSTRUMENTATION DID NOT INDICATE A HIGH TEMPERATURE ENVIRONMENT.						
VEHICLE EFFECT-NONE.						
CORRECTIVE ACTION-BOOT WAS IRD.						
AIRFRAME-A/D SUSTAINER SECTION	AC-60-0037/82-311-A3-02 SUST. THRUST CHAMBER BOOT	CAPTIVE 27-77011-1	ZE 601008	32	YES NO	YES 60/C
FAILURE MODE-FAILURE DURING OPERATION. SUSTAINER BOOT SLIPPED UP ABOVE THE CHAMBER LUGS. DISCOVERED DURING POST FIRING INSPECTION.						
SYSTEM EFFECT-NONE.						
VEHICLE EFFECT-NONE.						
CORRECTIVE ACTION-UNKNOWN.						

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DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIP DATA SOURCE PART NUMBER	VEHICLE DATE DIP	SITE TIME DIP	PRI OTH	VENDOR NAME VENDOR PART NO	
AIRFRAME-A/B SUSTAINER SECTION	STR-023/14-523-HR-1E SUST THRUST CHAMBER BOOT	CAPTIVE	601003	1-4	YES NO	60/C	899373
FAILURE MODE-STRUCTURAL- THE BOOT WAS TORN LOOSE DURING THE TEST. DISCOVERED DURING POST FIRING INSPECTION.							
SYSTEM EFFECT-NONE.							
VEHICLE EFFECT-NONE.							
CORRECTIVE ACTION-UNKNOWN.							
AIRFRAME-A/B SUSTAINER SECTION	AC-60-0033/32-507-A3-02 BETHRUST CHAM. BOOT	CAPTIVE	2E 600623	32	YES NO	60/C	890871
FAILURE MODE-STRUCTURAL. 82 BOOT BECAME UNFASTENED ALONG THE AXIAL BEAM.							
SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT. 82 MACELLE AMBIENT, PIT12T, EXCEEDED REDLINE AT 70 SECONDS WHEN 172 06F WAS INDICATED.							
VEHICLE EFFECT-PREMATURE PROPULSION CUTOFF.							
CORRECTIVE ACTION-UNKNOWN.							
AIRFRAME-A/B SUSTAINER SECTION	AE60-0923/P4-402-00-30 LOX TANK	FLIGHT	300 600729	14 37	NO YES		898103
FAILURE MODE-STRUCTURAL. ATLAS LOX TANK WAS RUPTURED AS RESULT OF POSSIBLE FAILURE OF MCDONNELL ADAPTER. POST-FLIGHT ADAPTER TESTS BY MCDONNELL SHOWED THAT ADAPTER UNDERWENT CLOVERLEAF DISTORTION UNDER AXIAL LOAD. IT IS BELIEVED THAT ADAPTER FAILURE LED TO RUPTURE OF LOX TANK.							
SYSTEM EFFECT-LOSS OF STRUCTURAL INTEGRITY. ATLAS LOX TANK WAS RUPTURED AT 37 SECONDS.							
VEHICLE EFFECT-LOSS OF VEHICLE INTEGRITY. RUPTURE OF LOX TANK LED TO VEHICLE DESTRUCTION. PRIOR TO RUPTURE OF THE LOX TANK, OPERATION OF ALL ATLAS SYSTEMS WAS SATISFACTORY.							
CORRECTIVE ACTION-1) LOX TANK SKIN THICKNESS WAS INCREASED TO INCREASE TANK STRENGTH. 2) REQUIREMENT MADE THAT ALL ATLAS-PAYLOAD COMBINATIONS UNDERGO STRUCTURAL DYNAMIC ANALYSIS.							
AIRFRAME-A/B SUSTAINER SECTION	AE60-0336/P4-402-00-82 BULKHEAD INSULATION	COUNTDOWN	020 600622	14	YES NO		
FAILURE MODE-LEAK-INTERNAL. INSULATION BULKHEAD SEAL FOUND CRACKED DURING FUEL TANKING 2 JUNE. CRACK WAS 23 INCHES IN QUAD 2 FROM STA 970 TO 945.							
SYSTEM EFFECT-NONE.							

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# DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIF DATA SOURCE PART NUMBER	VEHICLE DATE DIF	SITE TIME DIF	PRI IOTH	VENDOR NAME VENDOR PART NO
VEHICLE EFFECT-NONE. LAUNCH WITH 90 PCT FUEL AND 95 PCT LOX.						
CORRECTIVE ACTION-267 LB FUEL DRAINED FROM INTERMEDIATE BULKHEAD THROUGH DRAIN 7-76934-7. BULKHEAD USED AS IS BY LAUNCHING WITH 90 PERCENT FUEL AND 95 PERCENT LOX.						
AIRFRAME-A/B SUSTAINER SECTION	ETR-018/14-511-1R-SE SUSTAINER THRUST CHAMBER BOOT	CAPTIVE	600003	1-4	YES	60/C NO
FAILURE MODE-STRUCTURAL. BOOT WAS TORN DURING TEST.						
SYSTEM EFFECT-NONE.						
VEHICLE EFFECT-NONE.						
CORRECTIVE ACTION-NONE.						
AIRFRAME-A/B SUSTAINER SECTION	98-02-010 INSULATION, BULKHEAD	FAR 27-73007-867	62D 600602	ETR	YES NO	
FAILURE MODE-STRUCTURAL-INSULATION BULKHEAD RUPTURED DURING MISSILE FIRST FUEL TANKING WHEN TANK WAS FILLED TO 100. 2 PCT, DRAINED TO JUST BELOW 100 PCT AND STEPPED TO PHASE II PRESSURE FOR LEAK CHECKING. WHEN PRESSURE WAS REDUCED TO PHASE I A CONTINUOUS FLOW OF FUEL WAS NOTED FROM THE INSULATION SPACE BETWEEN THE BULKHEADS.						
CORRECTIVE ACTION-INSULATION BULKHEAD, DETERMINED UNNECESSARY BY TESTING, WAS REMOVED FROM 62D, 92D AND 4D. THEY WERE NOT BE INSTALLED ON 40E, 43E AND 4M AND 4N. IT WAS RE-EMPHASIZED THAT FUEL TANK SHOULD BE FILLED PRIOR TO LOX TANKING AND THAT FILL RATE SHOULD BE REDUCED WHEN 90 PCT LEVEL IS REACHED.						
AIRFRAME-A/B SUSTAINER SECTION	AA80-0041/P4-48N-UR-22 INTERMEDIATE INSULATION BULKHEAD	COMPOSITE-FRD/DPL 27-73007-867	62D 600602	14	YES	CONVAIR NO
FAILURE MODE-STRUCTURAL. BULKHEAD CRACKED 25 INCHES IN QUAD II FROM STA 970 TO STA 945. DISCOVERED AFTER FUEL TANKING, WHICH HAD FOLLOWED A LOX TANKING 1.5 HOURS BEFORE. 267 LBS FUEL DRAINED FROM BULKHEAD.						
SYSTEM EFFECT-NONE.						
VEHICLE EFFECT-NONE.						
CORRECTIVE ACTION-NONE. IN 531481 WRITTEN. DECISION MADE TO FLY WITH BULKHEAD AS IS BY TANKING FUEL TO 90 PERCENT PLW PROBE AND LOX TO 95 PERCENT LOX PROBE.						



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DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIP DATA SOURCE PART NUMBER	VEHICLE DATE DIP	SITE TIME DIF	PRI OTH	VENDOR NAME VENDOR PART NO
AIRFRAME-A/B SUSTAINER SECTION	ETR-013/14-510-1J-3E SUSTAINER THRUST CHAMBER BOOT	CAPTIVE	600328	1-4	YES NO	60/C
FAILURE MODE-STRUCTURAL. BOOT WAS BADLY TORN DURING THE TEST.						
SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT. SLIGHT INCREASE IN SUSTAINER ENVIRONMENTAL TEMPERATURE.						
VEHICLE EFFECT-NONE.						
CORRECTIVE ACTION-UNKNOWN.						
AIRFRAME-A/B SUSTAINER SECTION	A80-0320/P4-401-00-45 RETROCKET POD COVER	COUNTDOWN	430 600324	14 -9000	YES NO	
FAILURE MODE-OUT OF TOLERANCE OR SPECIFICATION. DIFFICULTY WAS ENCOUNTERED INSTALLING RETROCKET POD COVERS.						
SYSTEM EFFECT-NONE.						
VEHICLE EFFECT-COUNTDOWN DELAYED TO COMPLETE RETROCKET POD COVER; INSTALLATION DELAY ESTIMATED TO HAVE BEEN 55 MINUTES. ACCURATE HOLD TIME NOT DETERMINABLE DUE TO OTHER PROBLEMS.						
CORRECTIVE ACTION-UNKNOWN.						
AIRFRAME-A/B SUSTAINER SECTION	ETR-013/14-506-1H-3E SUSTAINER BOOT CLAMP	CAPTIVE	600421	1-4	YES NO	60/C
FAILURE MODE-FAILURE DURING OPERATION-BOOT CAME PARTIALLY UNSNAPPED.						
SYSTEM EFFECT-NONE. TEST WAS PREMATURELY TERMINATED BY AN OBSERVER WHEN THRUST SECTION TEMPS EXCEEDED REDLINE. HOWEVER, THIS AND PREVIOUS SIMILAR CUTOFFS HAVE BEEN DETERMINED TO BE THE RESULT OF INSTRUMENTATION DIFFICULTIES.						
VEHICLE EFFECT-NONE.						
CORRECTIVE ACTION-UNKNOWN.						
AIRFRAME-A/B SUSTAINER SECTION	A80-0130/P2-48N-03-55 INSULATION BULKHEAD	COMPOSITE-FRD/DPL	550 600321	12	YES NO	
FAILURE MODE-STRUCTURAL. IT WAS DISCOVERED AFTER A TANKING TEST THAT THE INSULATION BULKHEAD IN THE FUEL TANK HAD A PLIT. AFTER REPAIR AND ANOTHER TANKING THE INSULATION BULKHEAD HAD SPLIT AGAIN AND THE SEALER AROUND THE INSULATION BULKHEAD HAD FLAKED OFF AND DROPPED INTO THE FUEL TANK.						
SYSTEM EFFECT-NONE. AS A RESULT OF THE SPLIT, FUEL WAS LEAKING UNDER THE INSULATION BULKHEAD.						
VEHICLE EFFECT-COMPOSITE AND TANKING DELAYED AND RESCHEDULED.						

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DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIP DATA SOURCE PART NUMBER	VEHICLE DATE DIP	SITE TIME DIP	PRI OTH	VENDOR NAME VENDOR PART NO	
CORRECTIVE ACTION-AFTER REPAIRING THE INSULATION BULKHEAD ONCE AND DISCOVERY THAT IT HAD SPLIT AGAIN, THE INSULATION BULKHEAD WAS SUBSEQUENTLY REMOVED.							894007
AIRFRAME-A/B SUSTAINER SECTION	98-02-007 A16 POD DOOR LATCH	PAR 27-72941-13	42D 600304	ETR	YES NO		899390
FAILURE MODE-STRUCTURAL - THE LATCH FRACTURED AT THE THREE HINGE PIN SUPPORTS DUE TO AN EXCESSIVE MOVEMENT FROM IMPROPER ENGAGING OF THE HOOK TO MATING BARREL NUT. THE LATCH WAS LIKELY USED IMPROPERLY TO AID IN DOOR CLOSURE. STRONG SEALS AND POSSIBLE DOOR-TO-LATCH INTERFERENCE MADE DOOR CLOSURE DIFFICULT.							
CORRECTIVE ACTION-PROPER DOOR CLOSURE PROCEDURES AND CORRECTIVE MEASURES IN SEAL USAGE WERE MADE AVAILABLE TO FACTORY AND ETR PERSONNEL.							
AIRFRAME-A/B SUSTAINER SECTION	A12-27-110/P4-401-00-29 LOX TANK	FLIGHT	29D 800226	14 239.92	NO NO		895136
FAILURE MODE-STRUCTURAL. THE LOX TANK WAS RUPTURED AT 239.92, FOLLOWING RETROCKET FIRING. THE MISSILE EXPERIENCED A STRONG SHOCK. THE SATELLITE VEHICLE WAS ALSO AFFECTED. POSSIBLE CAUSE WAS INADVERTENT DESTRUCT OF THE UPPER STAGE AT SEPARATION.							
SYSTEM EFFECT-LOSS OF STRUCTURAL INTEGRITY-VEHICLE STRUCTURE FAILED.							
VEHICLE EFFECT-LOSS OF VEHICLE STABILITY THE INITIAL SHOCK AND THE VENTING OF GASES. THROUGH THE BREAK CAUSED MISSILE TUMBLING.							
CORRECTIVE ACTION-NONE. FOR ATLAS. UPPER STAGE CORRECTIVE ACTION CONSISTED OF A REDESIGN OF THE INADVERTENT DESTRUCTIVE SYSTEM.							892803
AIRFRAME-A/B SUSTAINER SECTION	ETR-021/14-519-02-92 SUSTAINER THRUST CHAMBER BOOT	CAPTIVE	800209	1-4	YES NO		
FAILURE MODE-STRUCTURAL. THE SUSTAINER BOOT WAS TORN LOOSE DURING THE RUM. ENGINE COMPARTMENT TEMPERATURES DID NOT INCREASE APPRECIABLY.							
SYSTEM EFFECT-LOSS OF STRUCTURAL INTEGRITY.							
VEHICLE EFFECT-NONE.							
CORRECTIVE ACTION-REPLACE BOOT.							

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DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM	TEST/REPORT NUMBER	DIP DATA SOURCE	VEHICLE DATE DIP	SITE TIME DIP	PRI OTH	VENDOR NAME
SUB-SYSTEM	FAILED COMPONENT NAME	PART NUMBER	DATE DIP	TIME DIP		VENDOR PART NO
AIRFRAME-A/B	ETR-008/14-502-C1-SE	CAPTIVE	800204	1-4	YES	60/C
SUSTAINER SECTION	SUSTAINER THRUST CHAMBER BOOT				NO	
FAILURE MODE-FAIL DURING OPERATION. SUSTAINER BOOT DROPPED DOWN AND WAS TORN DURING THE TEST.						
SYSTEM EFFECT-NONE.						
VEHICLE EFFECT-NONE.						
CORRECTIVE ACTION-UNKNOWN.						
AIRFRAME-A/B	32-402-A1-02	CAPTIVE	20	32	YES	60/C
SUSTAINER SECTION	SUSTAINER BOOT		391903		NO	
FAILURE MODE-STRUCTURAL. POST-TEST INSPECTION REVEALED LOSS OF SUSTAINER BOOT DURING TEST.						
SYSTEM EFFECT-LOSS OF STRUCTURAL INTEGRITY. NO ABNORMAL INCREASE IN THRUST SECTION TEMPERATURES.						
VEHICLE EFFECT-NONE.						
CORRECTIVE ACTION-REPLACE BOOT.						
AIRFRAME-A/B	98-02-008	FAR	430	ETR	YES	
SUSTAINER SECTION	OUTLET INSTALLATION-FUEL SUPPLY LI 7-73201-801		391228		NO	
FAILURE MODE-LEAK-EXTERNAL-FUEL LEAK OF 6 DROPS PER MINUTE AT 47 PSIG AT FUEL TANK OUTLET FITTING THRU A 1/10 INCH LONG CRACK. THE CRACK WAS CAUSED BY POOR HAND MADE ROSETTE WELDS WHICH CRACKED WITH TIME AND HANDLING. REPEAT OF THE AREA NEAR A SECOND ROW OF WELDS PROBABLY CONTRIBUTED TO THE FAILURE.						
CORRECTIVE ACTION-TYPE OF WELD WAS CHANGED FROM ROSETTE TO WELT-ARC SPOT FOR MISSILES 720 ON, EXCEPT FOR 760. THE DISTANCE BETWEEN WELD AREAS WAS INCREASED. SEALANT TYPE E.C. 1293 WILL BE APPLIED TO EXTERNAL FLANGE JOINTS ON MISSILE ES NOW MADE. FOR 630 AND ON, A LEAKAGE TEST AT 80 PSIG WILL BE MADE.						
AIRFRAME-A/B	32-410-C7-24	CAPTIVE	240	3-2	YES	60/C
SUSTAINER SECTION	SUSTAINER THRUST CHAMBER BOOT		391013	34	NO	
FAILURE MODE-STRUCTURAL-THE SUSTAINER THRUST CHAMBER BOOT WAS LOST-CAUSE UNKNOWN.						
SYSTEM EFFECT-HIGH THRUST SECTION TEMPERATURES.						
VEHICLE EFFECT-NONE-ALTHOUGH THE SUSTAINER EXHAUSTOR WAS DENIED.						
CORRECTIVE ACTION-THE BOOT WAS FURTHER REDESIGNED.						

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DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIF DATA SOURCE PART NUMBER	VEHICLE DATE DIF	SITE TIME DIF	PRI OTH	VENDOR NAME VENDOR PART NO	
AIRFRAME-A/B SUSTAINER SECTION	90-02-006 LIQUID OXYGEN TANK PRESSURIZATION BUCT	FAR 7-73313-801	90 901014		YES NO		999361
<p>FAILURE MODE-LEAK-EXTERNAL - EXCESSIVE DUCT LEAKAGE THRU CORROSION PIT HOLES AND STRESS CORROSION CRACKS. CORROSION WAS ACCELERATED BY USE OF AN UNDILUTED ACIDIC CLEANER, TURCO WD1. AN ADEQUATE RINSE AFTER CLEANING WAS DIFFICULT DUE TO CONFIGURATION OF WORK PLATFORMS PREVENTING ACCESSIBILITY. THE TURCO WD1 ALSO BECAME ENTRAPPED IN FATTING SURFACE AND FITTINGS IN OTHER PORTIONS OF THE MISSILE. (LEAKAGE CONFIRMED BY TEST).</p> <p>CORRECTIVE ACTION-A CLEANING INSTRUCTION WAS ISSUED WHICH DISCONTINUED USE OF ACIDIC CLEANERS AND CALLED FOR USE OF CLEAR WATER FOLLOWED BY A PRESERVATIVE COATING OF WD40. STAINS NOT REMOVED BY WATER WILL BE REMOVED BY USAGE OF A PINE GRIIT RUBBING COMPOUND FOLLOWED BY A WATER RINSE AND WD40 APPLICATION.</p>							
AIRFRAME-A/B SUSTAINER SECTION	EH1341/P3-402-00-17 BOOT SUSTAINER	PRF	17D 990909	18	YES NO		999378
<p>FAILURE MODE-STRUCTURAL. THE SUSTAINER BOOT BECAME DISPLACED UPWARDS 15 INCHES DURING THE FLIGHT READINESS FIRING.</p> <p>SYSTEM EFFECT-LOSS OF STRUCTURAL INTEGRITY. DISPLACEMENT OF THE SUSTAINER BOOT PERMITTED HEAT TO ENTER. THE THRUST SECTION TRANSIENTS WERE OBSERVED ON SUSTAINER YAW ENGINE POSITION.</p> <p>VEHICLE EFFECT-THE VEHICLE WAS HELD DOWN DURING THE RUN, PROHIBITING ANY REACTION BY OR ON THE VEHICLE. THE TRANSMITTERS CONSISTED OF TWO SPIKES OF APPROXIMATELY 1.0 DEGREES AMPLITUDE.</p> <p>CORRECTIVE ACTION-NONE.</p>							
AIRFRAME-A/B SUSTAINER SECTION	ZC-7-221/P2-308-00-08	FLIGHT	AC 990781	12 42	YES NO		999388
<p>FAILURE MODE-STRUCTURAL. AT 42 SECONDS, SPOTS, APPEARING TO BE PIECES OF STRUCTURE OF ONE SQUARE FOOT AREA, WERE SEEN TO FALL AWAY FROM THE VEHICLE. THE PIECES APPEARED TO BE BLOWN OUTWARD FROM AN AREA JUST FORWARD OF THE BOOSTER SECTION. SPOTS WERE ALSO SEEN AT 49 SECONDS ON THE GUARD 1 AND 2 SIDES.</p> <p>SYSTEM EFFECT-NONE. PIECES WERE NOT IDENTIFIED.</p> <p>VEHICLE EFFECT-NONE. FLIGHT PLAN WAS FULLY SATISFIED, HOWEVER, IMPULSE-TYPE DISTURBANCES WERE REFLECTED BY ROLL, PITCH AND YAW RATE GYROSCOPES AT 42.4, 43.6 AND 49.8 SECONDS, RESPECTIVELY. RELATIONSHIP TO PIECES UNKNOWN.</p> <p>CORRECTIVE ACTION-NONE.</p>							

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DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM	TEST/REPORT NUMBER	TEST/REPORT NUMBER	VEHICLE DATE	SITE	PRI	VENDOR NAME
SUB-SYSTEM	FAILED COMPONENT NAME	PART NUMBER	DATE	TIME	OTH	VENDOR PART NO
AIRFRAME-A/B	31-402-A1-09	CAPTIVE	9D	81	YES	50/C
SUSTAINER SECTION	SUSTAINER BOOT		390522		NO	
<p>FAILURE MODE-STRUCTURAL. POST TEST INSPECTION REVEALED A TORN SUSTAINER BOOT AROUND LOWER SEAM.</p> <p>SYSTEM EFFECT-NONE. ENGINE COMPARTMENT TEMPERATURES WERE NORMAL.</p> <p>VEHICLE EFFECT-NONE.</p> <p>CORRECTIVE ACTION-REPAIR BOOT.</p>						
AIRFRAME-A/B	WDE39-0230-A/1A-302	CAPTIVE	8C	1A	YES	50/C
SUSTAINER SECTION	SUSTAINER BOOT		390527	3.8	NO	
<p>FAILURE MODE-STRUCTURAL. LOSS OF SUSTAINER BOOT WAS INDICATED BY SUSTAINER GIMBALLING TRANSIENTS AND ENGINE COMPARTMENT TEMPERATURE BEHAVIOR.</p> <p>SYSTEM EFFECT-NONE. ENGINE COMPARTMENT TEMPERATURES DID NOT INCREASE SIGNIFICANTLY.</p> <p>VEHICLE EFFECT-NONE. ENGINE COMPARTMENT FIRE AND VEHICLE EXPLOSION RESULTED FROM ADDITIONAL FAILURES.</p> <p>CORRECTIVE ACTION-UNKNOWN.</p>						
AIRFRAME-A/B	98-02-004	FAR	5C		YES	
SUSTAINER SECTION	FUEL TANK CONE FLANGE O-RING	7-76002	390223		NO	
<p>FAILURE MODE-LEAK-EXTERNAL-FUEL LEAK AT FLANGE JOINT OF FUEL TANK CONE AREA DUE TO IMPROPERLY (FACTORY) INSTALLED O-RING SEAL. SEAL WAS CUT IN TWO PLACES AND WAS INSUFFICIENTLY TIGHTENED TO 50-55 INCH-POUND. STANDARD TORQUE IS 70 INCH POUNDS.</p> <p>CORRECTIVE ACTION-EFFECTIVE ON MISSILE 9D AND ON THIS SEAL WILL BE REPLACED WITH A LOW PRESSURE TYPE. A CHECK WAS MADE OF THE INSTALLATION AND TIGHTENING PROCEDURES USED ON THIS SEAL.</p>						
AIRFRAME-A/B	FTA 4410/P4-201-00-12	FAR	12B	1A	YES	
SUSTAINER SECTION	POD DOOR SCREWS.		391121	-7200	NO	
<p>FAILURE MODE-STRUCTURAL. TWELVE SCREWS ON THE POD NO 2 DOORS SHEARED OFF INSTEAD OF BACKING OUT.</p> <p>SYSTEM EFFECT-NONE.</p> <p>VEHICLE EFFECT-COUNTDOWN DELAYED. APPROXIMATELY 80 MINUTES OF A 103 MINUTE HOLD WAS DUE TO DIFFICULTY IN GETTING POD DOORS OPEN.</p> <p>CORRECTIVE ACTION-DRILLED SCREWS OUT AND REPLACED WITH NEW ONES.</p>						

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DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIP DATA SOURCE PART NUMBER	VEHICLE DATE DIP	SITE TIME DIP	PRI OTH	VENDOR NAME VENDOR PART NO	
AIRFRAME-A/B SUSTAINER SECTION	FTA282/P3-201-00-06 BOOTS	FRF	68 980910	13/ETR PLUS 1	YES NO	YES 60/C	003261
FAILURE MODE-STRUCTURAL. THE SUSTAINER ENGINE BOOT WAS TORN FROM THE MISSILE DURING ENGINE FIRING.							
SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT.							
VEHICLE EFFECT-NONE.							
CORRECTIVE ACTION-REPLACED BOOT WITH IMPROVED FASTENING.							
AIRFRAME-A/B SUSTAINER SECTION	FTA2542/P4-101-00-13 BOSS-INSTRUMENTATION	FRF	13A 980131	14/ETR	YES NO		003334
FAILURE MODE-LEAK-EXTERNAL. FUEL LEAKAGE AT AN INSTRUMENTATION BOSS TORUSAL FITTING IN THE MISSILE FUEL TANK.							
SYSTEM EFFECT-NONE.							
VEHICLE EFFECT-COUNTDOWN DELAYED. TOTAL HOLD TIME WAS FOUR HOURS TO FIX THESE LEAKS AND SEVERAL OTHER LEAKS.							
CORRECTIVE ACTION-LEAK CORRECTED.							
AIRFRAME-A/B SUSTAINER SECTION	FTA2380/P4-1MM-01-12 DISCONNECT PANEL	COMPOSITE-FRD/DPL	12A 971126	14/ETR	YES NO		002364
FAILURE MODE-OUT OF TOLERANCE. THE QUAD IV DISCONNECT PANEL WAS OUT OF ALIGNMENT.							
SYSTEM EFFECT-OPERATION DOES NOT START. FUEL TANKING COULD NOT BE ACCOMPLISHED.							
VEHICLE EFFECT-COUNTDOWN DELAYED AND RESCHEDULED. 99 MINUTES HOLD.							
CORRECTIVE ACTION-UNKNOWN.							
AIRFRAME-A/B SUSTAINER SECTION	EN759/1-1-113-SP6-05 INTERMEDIATE BULKHEAD	CAPTIVE	3A 971029	1-1	NO NO		003981
FAILURE MODE-STRUCTURAL-SHORTLY AFTER THE TEST IT WAS FOUND THAT THE INTERMEDIATE BULKHEAD WAS COLLAPSED WITH THREE SMALL TEARS WHERE SHARP CREASES EXISTED. TO MAINTAIN FUEL TANK PRESSURE IT WAS NECESSARY TO FLOW HELIUM INTO THE TANK WHILE THE LO2 TANK WAS BEING CONTINUOUSLY VENTED. CAUSED BY ERRONEOUS PRESSURE INDICATIONS TO THE PCU RESULTING FROM MERCURY AND FUEL CONTAMINATION IN THE PRESSURE SENSE LINE.							
SYSTEM EFFECT-LOSS OF STRUCTURAL INTEGRITY.							
VEHICLE EFFECT-NONE. THE TEST WAS COMPLETED SATISFACTORILY.							
CORRECTIVE ACTION-NONE. RUPTURE OF THE BULKHEAD PRECLUDED ANY FURTHER TESTING OF THIS VEHICLE.							

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## DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIP DATA SOURCE PART NUMBER	VEHICLE DATE DIP	SITE TIME DIP	PRI QTH	VENDOR NAME VENDOR PART NO	
AIRFRAME-A/B SUSTAINER SECTION	EN-7331-1,112-8P3-03 POD NO. 1 DOOR	CAPTIVE	5A 571024	1-1	YES NO	60C	000290
FAILURE MODE-OUT OF TOLERANCE. POD NO. 1 DOOR COULD NOT BE SECURED DUE TO INTERFERENCE OF BAND THAT HOLDS THE EQUIP MENT. THE BAND WAS 30 DEGREES OFF.							
SYSTEM EFFECT-NONE. NOT IN OPERATION.							
VEHICLE EFFECT-COUNTDOWN DELAYED.							
CORRECTIVE ACTION-DOOR WAS WIRED DOWN AND THE OPEN AREA TAPED.							
AIRFRAME-A/B SUSTAINER SECTION	FTA1779/P4-101-00-04 BOSS-ON CONE OF FUEL TANK	PNF	4A 570326	14/ETR	YES NO		003327
FAILURE MODE-LEAK (EXTERNAL). A FUEL LEAK AT A BOSS ON THE CONE OF FUEL TANK WAS FOUND.							
SYSTEM EFFECT-NONE.							
VEHICLE EFFECT-NONE.							
CORRECTIVE ACTION-TIGHTENED BOSS.							
AIRFRAME-A/B SUSTAINER SECTION	AE62-0351/32-601-A1-33 SUSTAINER BOOT	CAPTIVE	33F 62314	3-2 30.31	YES NO	60/C	000619
FAILURE MODE-FAIL DURING OPERATION. SUSTAINER BOOT DISPLACED AS MUCH AS 8 INCHES BELOW BOOT RETAINERS.							
SYSTEM EFFECT-HIGH TEMPERATURE ENVIRONMENT. RAPID TEMPERATURE INCREASE OF THE ENGINE COMPARTMENT AND SUSTAINER ENGI NE ENVIRONMENT. PAINT ON THE ASPIRATOR BETWEEN RETAINERS AND WHERE THE BOOT HUGS THE ASPIRATOR WAS BADLY HEAT BLISTE RED.							
VEHICLE EFFECT-NONE.							
CORRECTIVE ACTION-UNKNOWN.							
AIRFRAME-A/B SUSTAINER SECTION	AE61-0687 LI-401-00-108 RETROCKET COVER PLATE	FLIGHT	108D	11 43	YES NO		
FAILURE MODE-STRUCTURAL. TRACKING FILM DATA SHOWS AN OBJECT FALLING FROM MISSILE. FLIGHT CONTROL PROBLEM BELIEVED C AUSED BY HEATING OF THE GYRO PACKAGE LEADS TO THE BELIEF THAT THE OBJECT MAY BE THE RETROCKET COVER PLATE.							
SYSTEM EFFECT-NONE. EXTERNAL HEATING OF THE GYRO PACKAGE COULD RESULT IF THE RETROCKET COVER PLATE AT THE FORWARD END OF THE POD CAME OFF IN FLIGHT.							
VEHICLE EFFECT-IMPROPER TRAJECTORY. DUE TO HEATING PROBLEM OF THE GYRO, PITCH CONTROL WAS LOST AND MISSION FAILURE							

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DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIF DATA SOURCE PART NUMBER	VEHICLE DATE DIF	SITE TIME DIF	PRI OTH	VENDOR NAME VENDOR PART NO
<p>097999</p> <p>RESULTED.</p> <p>CORRECTIVE ACTION-THE COVER WAS REDESIGNED TO PREVENT POSSIBLE BLOWING OFF.</p>						
AIRFRAME-A/B BOOSTER-SUSTAINER SEPAR	SLV-98-06-3019F PRESSURE CARTRIDGE-SQUID	FAR 27-02987-9	660310	ETR	YES MI-SHEAR NO PC11-005	
<p>090306</p> <p>FAILURE MODE-OUT OF TOLERANCE. FOUR UNITS WERE REJECTED WHEN UNSATISFACTORY RESISTANCE READINGS WERE FOUND BETWEEN THE BRIDGE WIRES AND THE CARTRIDGE CASE. FOUND DURING PROCEDURE 89-92784-1. DURING TEST ONE UNIT INADVERTENTLY FIRED SERIAL NUMBER 32129 PER IR W02904. BRIDGE WIRE TO CASE RESISTANCE OF THE REMAINING UNITS WERE WITHIN CONVAIR SPECIFICATIONS.</p>						
<p>CORRECTIVE ACTION-CAUSE OF DETONATION OF SINGLE UNIT WAS NOT FOUND AND SINCE AN OCCASIONAL DETONATION DURING SCREENING TEST CAN BE EXPECTED. UNITS RETURNED TO VENDOR. NO FURTHER ACTION TAKEN.</p>						
AIRFRAME-A/B BOOSTER-SUSTAINER SEPAR	GOC-BKF65-036/LA-7101-00-7108 STAGING LATCH	FLIGHT	7108 850327	2-4 135.	YES YES	
<p>090943</p> <p>FAILURE MODE-FAIL TO OPERATE AT PRESCRIBED TIME. POSSIBLY A LATE ACTING STAGING LATCH DID NOT RELEASE UNTIL AFTER THE BSTR PACKAGE BEGAN TO MOVE AND SHEARED THE FAIL SAFE BOLTS AT 8000 LBS LOAD AND EITHER IMPARTED A SHOCK INTO THE 1133 RING OR THE BOLTS BECAME PROJECTILES.</p> <p>SYSTEM EFFECT-NONE. NO EFFECT IN THE AIRFRAME SYSTEM WAS INDICATED.</p> <p>VEHICLE EFFECT-PREMATURE VERNIER SHUTDOWN. POSSIBLY THE SHOCK OR FLYING HARDWARE COULD HAVE RUPTURED THE VI LOX LINE OR BLEED VALVE RESULTING IN THE 80 PERCENT DROP IN VI PERFORMANCE THAT OCCURRED AT STAGING.</p> <p>CORRECTIVE ACTION-NONE AT THIS TIME. GOC HAS PROPOSED VERNIER SHOCK TEST TO INVESTIGATE THE POSSIBILITY OF THIS OCCURRING.</p>						
AIRFRAME-A/B BOOSTER-SUSTAINER SEPAR BOOSTER SECTION	CT-9D-02-050 SEPARATION FITTING -LATCH- ASSEMBL 7-43433-5 IES	FAR 7-43433-5	1580 850302	36A	NO RAKER-NUMLEY YES 7-45635-3	
<p>090913</p> <p>FAILURE MODE-STRUCTURAL-SEVEN OF THE TEN SEPARATION FITTINGS RECOVERED FROM THE 1580 WRECKAGE WERE ANALYZED IN CONNECTION WITH MISSILE LOSS. FIVE OF THE SEVEN WERE NOT SEPARATED. TWO WERE SEPARATED APPARENTLY FROM THE EXPLOSION AFTER VEHICLE HAD FALLEN TO THE GROUND. NO SEPARATION SYSTEM FAILURE WAS INDICATED. THIS IS A SECONDARY FAILURE.</p> <p>CORRECTIVE ACTION-NONE. NO FITTING FAILURES WERE INDICATED.</p>						



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SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIF DATA SOURCE PART NUMBER	VEHICLE DATE DIF TIME DIF	SITE	PRI OTH	VENDOR NAME VENDOR PART NO	
AIRFRAME-A/B BOOSTER-SUSTAINER SEPAR	27A3981 EXPLOSIVE VALVE	UTP-PET 27-C4304-3	930129		YES NO	CONAX CORP. NO 2790A	091600
FAILURE MODE-STRUCTURAL. DURING VALVE OPERATION ONE OF THE COMPONENTS (THE CUTTER) FAILED.							
CORRECTIVE ACTION-GD/C COORDINATED WITH THE VENDOR (CONAX) FOR AN ANALYSIS OF THE CUTTER MATERIAL AND HEAT TREATMENT. IT WAS DETERMINED TO BE VENDOR QUALITY CONTROL PROBLEM.							
AIRFRAME-A/B BOOSTER-SUSTAINER SEPAR	SLV-9D-06-289F SEPARATION LATCH	FAR 7-45435-3	69-0071- 01 840801		YES NO	BAKER-MANLEY NO 7-45435-3	092263
FAILURE MODE-EXTERNAL LEAKAGE. GNR LEAKED PAST THE PISTON O-RING AND OUT THE BLEED HOLE AT A RATE OF 156 CC PER MINUTE WHEN LATCH WAS PRESSURIZED TO 100 P.S.I. CAUSE WAS AN O-RING DAMAGED AT VENDOR ASSEMBLY.							
CORRECTIVE ACTION-CONFIRMED. (1) GD/A BUYER ON AUG 17 1964 INFORMED THE VENDOR OF THIS ANALYSIS TO PREVENT RECURRING OF ASSEMBLY DAMAGE DURING VENDOR REWORK OF THE LATCHES. (2) GD/A RECOMMENDED THAT VENDOR IMPROVE ASSEMBLY PRACTICES. PER RAR SLV-9D-06-3709. (3) VENDOR REPLY TO VCAR 8748-64 THAT EFFECTIVE SEPT 10, 64 (A) ALL O-RINGS WILL BE VISUALLY INSPECTED FOR DAMAGE PRIOR TO ASSEMBLY. (B) BODY BORE AND O-RING GROOVE WILL BE INSPECTED AND WIPED CLEAN OF FOREIGN MATERIAL. (C) THE CAP WILL BE INSTALLED IMMEDIATELY AFTER PISTON IS IN PLACE.							
AIRFRAME-A/B BOOSTER-SUSTAINER SEPAR	SLV-9D-06-289F SEPARATION LATCH	FAR 7-45435-3	69-0071- 1 840801		YES NO	BAKER-MANLEY NO 7-45435-3	091403
FAILURE MODE-INTERNAL LEAKAGE. LEAKED GASEOUS NITROGEN AT 100 PSIG. CAUSED BY AN O-RING DAMAGED AT LATCH ASSEMBLY BY VENDOR.							
CORRECTIVE ACTION-FAILURE CONFIRMED. PER VCAR 8748-64, DATED 9-17-64, VENDOR WILL INSPECT O-RINGS JUST PRIOR TO ASSEMBLY. VALVE BODY BORE AND O-RING GROOVE WILL BE WIPED AND VISUALLY INSPECTED FOR FOREIGN MATERIALS. CAP WILL BE INSTALLED IMMEDIATELY AFTER PISTON IS IN PLACE. EFFECTIVE FOR ALL NEW AND REMORKED UNITS.							
AIRFRAME-A/B BOOSTER-SUSTAINER SEPAR	LV-99-06-277F SEPARATION LATCH	FAR 7-45435-3	289D 840319		FACTORY NO	BAKER-MANLEY NO 7-45435-3	
FAILURE MODE-EXTERNAL LEAKAGE. AUDIBLE LEAKAGE AT THE VENT HOLE AT 100PSI. DURING E.O.P. 333.66 PARA. 4.24.1. DISASSEMBLY REVEALED METALLIC CONTAMINATION ON THE O-RING. TWO CAP BREAK AWAY AND TIGHTENING TORQUE WERE 10 AND 18 FOOT POUNDS. DRAWING ECH 309412 REQUIRES 125 PLUS OR MINUS 25 FOOT POUNDS.							
CORRECTIVE ACTION-CAUSE OF FAILURE NOT CONFIRMED. (1) RAR LV-99-06-3701 RECOMMENDED THAT LATCHES BE DISASSEMBLED AND							

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## DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIF DATA SOURCE PART NUMBER	VEHICLE DATE DIF	SITE TIME DIF	PRI DIF	VEHICLE NAME VEHICLE PART NO	
D CLEANED INTERNALLY AFTER ACTUATION AND THAT A DESIGN REVIEW BE HELD TO DETERMINE IF TORQUE VALUES ARE REALISTIC. (1) E) GDA INTRA-COMPANY LETTER OF JULY 9, 1964 STATED THAT LATCHES ARE NOT ACTUATED IN FINAL ASSEMBLY OR CHECKOUT-GME AT 100 PSI IS USED ONLY AS A LEAK CHECK. (3) CIC 43791 RELEASED AUG 6, 1964 DID REDUCE END CAP TORQUE TO 30 PLUS OR MINUS 6 FOOT POUNDS.							009530
AIRFRAME-A/B BOOSTER-SUSTAINER SEPAR	LV99-06-237F SEPARATION FITTING, 1ST STAGE	FAR 7-45412	3500 631211	MAB5-MTR	NO	NO	009523
FAILURE MODE-CONTAMINATION. CORROSION WAS FOUND ON ALL EXPOSED STEEL SURFACES. CORROSION WAS THE RESULT OF CONDENSATION SALT DEPOSITS PLUS OTHER AIRBORNE DEBRIS. PERIODIC CLEANING OF THE FITTING WOULD ELIMINATE THE SEVERITY OF BUILDUP.							
CORRECTIVE ACTION-LUBRICATION AND PRESERVATION ARE NOW IN USE-A) FACTORY FITTINGS ARE INSPECTED AND SPRAYED WITH WD 40 PER M.P.3. 61.11. B) PROCEDURE 27-93782 SECTION 3.3.1 C) PROCEDURE 27-93744-1 SECTION 6.7.1 THIS MISSILE HAD BEEN EXPOSED TO THE ELEMENTS FOR ONE YEAR WHILE BEING USED FOR CHECK OUT AT THREE DIFFERENT SITES.							009011
AIRFRAME-A/B BOOSTER-SUSTAINER SEPAR	LV-20-02-284C STAGING DISCONNECT ASSEMBLY	FAR 27-02431	3500 631210	1-2/PALC	YES	NO	
FAILURE MODE-PREATURE OPERATION. DURING DPL TO T/P 27-94443, ASSEMBLY PANEL WAS FOUND DISCONNECTED. UNIT CHECKED DAY MTR AND DISPOSITIONED-ACCEPTABLE TO ENGINEERING. UNIT NOT FORWARDED TO GD/C FOR ANALYSIS.							
CORRECTIVE ACTION-NONE.							
AIRFRAME-A/B BOOSTER-SUSTAINER SEPAR	SP-A9-08-3140F TUBING ASSEMBLY-STAGING; PRESSURE	FAR 27-45400-33	2120 630824	FACTORY	YES	NO	007721
FAILURE MODE-STRUCTURAL TWO SLEEVES WERE CRACKED. CAUSED BY STRESS CORROSION.							
CORRECTIVE ACTION-CONFIRMED PER FAR SP-A9-08-3649 THE DESIGN GROUP REQUESTED DELETION FROM 27-45400 OF THE AN-D16 SLEEVE. APPROPRIATE PERSONNEL WERE NOTIFIED OF THIS ANALYSIS. ALL AN-D16-2 SLEEVES WERE PURGED FROM STOCK NECESSITATING USE OF THE ALTERNATE MS-20819. ECH 817376 INSURED USE OF CORRECT SLEEVE.							
AIRFRAME-A/B BOOSTER-SUSTAINER SEPAR	NZ-9D-06-103F FITTING-FIRST STAGE	FAR 7-45435	1590 630124	MTR	YES	NO	
FAILURE MODE-CONTAMINATION. FOUR OF THE 10 FITTINGS WOULD NOT RELEASE AT THE REQUIRED MAXIMUM PRESSURE DUE TO EXCESSIVE CORROSION. CAUSED BY ENVIRONMENTAL CONDITIONS WITH A CONTRIBUTING CAUSE DUE TO USE OF DISSIMILAR METALS IN THE FITTINGS. 10 COMPLETE FITTINGS FROM 1980-INCLUDING PARTS REPLACED BY FAR NZ-9D-36-181P.							

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SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIF DATA SOURCE PART NUMBER	VEHICLE DATE DIF	SITE TIME DIF	PRI OTH	VENDOR NAME VENDOR PART NO	
	CORRECTIVE ACTION-TECHNICAL ORDER 21-34830-102 DATED DEC. 12, 1962, ON CORROSION CONTROL AND TREATMENT WAS DISTRIBUTED.						090736
AIRFRAME-A/B BOOSTER-SUSTAINER SEPAR	SP-90-08-3096-F STAGING DISCONNECT, O-RING	FAR 27-45407-9	119-D 021028	1-1	YES NO	60/C	090742
	FAILURE MODE-LEAKING EXTERNAL. FIRST-STAGE SEPARATION VALVE INSTALLATION WAS REPORTED LEAKING. FAILURE WAS CAUSED BY AN IMPROPERLY INSTALLED O-RING.						
	CORRECTIVE ACTION-RESPONSIBLE PERSONNEL HAVE BEEN MADE AWARE OF THIS FAILURE AND A CLOSER CHECK ON INSTALLATION OF O-RING WILL BE ACCOMPLISHED. A REVIEW OF INSTALLATION AND CHECKOUT PROCEDURES REVEALS THAT THEY ARE ADEQUATE.						
AIRFRAME-A/B BOOSTER-SUSTAINER SEPAR	NZ-08-101F SEPARATION LATCH ASSEMBLY SEGMENT	FAR 7-45428-7	1590 020915	WTR			090828
	FAILURE MODE-STRUCTURAL. THREE SEGMENTS FAILED FROM STRESS CORROSION INTERGRANULAR CRACKING. CAUSED BY USE OF DISSIMILAR MATERIALS-AN ANODIZED ALUMINUM SEGMENT AND TWO CHROME PLATED STEEL PRESS FIT BUSHINGS. PARTIAL DESTRUCTION OF THE CORROSION BARRIER MATERIAL OCCURS AT ASSEMBLY.						
	CORRECTIVE ACTION-(1) FAILURE ANALYSIS REQUESTED THAT SEGMENT MATERIAL BE CHANGED AND THAT DIMENSIONAL TOLERANCE BE OPENED. (2) DESIGN GROUP RECOMMENDS THAT NO CHANGE BE MADE IN OPERATIONAL VEHICLE BECAUSE (A) THIS WAS THE ONLY ASSUMED FAILURE AND THIS OCCURRED IN A MISSILE SUBJECTED TO EXTREME ATMOSPHERIC CONDITIONS NOT NORMALLY ENCOUNTERED. (B) FAILURE HISTORY DOES NOT WARRANT A SERVICE ACTION RETROFIT. (3) REF. FAR NZ-90-04-3801.						
AIRFRAME-A/B BOOSTER-SUSTAINER SEPAR	AG-90-08-133F SEPARATION LATCH O-RING	FAR 7-45435-3	020615	ETR	YES NO		090909
	FAILURE MODE-LEAK-EXTERNAL-FITTING LEAKED DURING A SYSTEM CHECK. STATIC O-RING WAS FOUND TORN AND THE PISTON O-RING WAS MARLED. NEITHER SHOWED EVIDENCE OF LUBRICATION. FAR AG-90-08-123 PROVED THAT THE PISTON O-RING CAN BE LEFT OUT OF THE ASSEMBLY AND THE SEPARATION MECHANISM WILL STILL OPERATE WITHIN SPECIFICATION.						
	CORRECTIVE ACTION-CONFIRMED. (1.) A CORRECTIVE ACTION REQUEST WAS MADE TO OUTSIDE PRODUCTION INSPECTION FOR BETTER VENDOR Q.C. AND FOR THE ASSEMBLY PROCESS TO BE MONITORED. (2.) TEMPORARY CHANGE AUTHORIZATION 3 TO EOP 338.448 ISSUE D 9/8/62 REQUIRED A SPECIFIC LEAK CHECK OF EACH SEPARATION FITTING DURING FACTORY SYSTEM LEAK CHECK.						

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DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIP DATA SOURCE PART NUMBER	VEHICLE DATE DIP TIME	SITE DIP TIME	PRI OTH	VENDOR NAME VENDOR PART NO	
AIRFRAME-A/B BOOSTER-SUSTAINER SEPAR	AG-98-08-123F SEPARATION LATCH O-RING	FAR 27-43433-3	620327	ETR	YES NO		099300
FAILURE MODE-LEAK-EXTERNAL-A BLOWING LEAK FROM THE VENT HOLES DEVELOPED. IT WAS DUE TO AN UNLUBRICATED AND SEVERELY ADDED STATIC O-RING. THE O-RING WAS DAMAGED ON THE THREADS. THE PISTON O-RING WAS MISSING BUT TESTS DETERMINED TH AT THIS DID NOT AFFECT SEPARATION PRESSURE.							
CORRECTIVE ACTION-CONFIRMED. REPLY TO RAR AG-98-08-837 LISTS THIS GO/C ACTION. 1. MORE STRINGENT VENDOR QUALITY CON TROL OF ASSEMBLY OPERATIONS WAS REQUESTED OF OUTSIDE PRODUCTION INSPECTION BY / CORRECTIVE ACTION REQUEST. 2. TEMPOR ARY CHANGE AUTHORIZATION 3 TO EOP 333-688 WAS ISSUED 5/8/62 REQUIRING A SPECIFIC LEAK CHECK OF EACH SEPARATION FITTI NG DURING THE FACTORY SYSTEM LEAK CHECK.							
AIRFRAME-A/B BOOSTER-SUSTAINER SEPAR	A-9F-06-121F SEPARATION LATCHES	FAR 7-43433-3	590 620319		NO YES		099330
FAILURE MODE-STRUCTURAL-ALL TEN FITTINGS SHEARED DUE TO IMPROPERLY APPLIED TENSILE IMPACT LOADING WHEN THE HOLD DOW N SYSTEM WAS EXERCISED WITH THE MISSILE STILL IN STRETCH. POOR ELONGATION PROPERTIES AND RELATIVELY POOR NOTCH SENSI TIVITY CHARACTERISTICS WERE MAGNIFIED BY THE IMPACT ON THE FITTINGS. FAULTY BENDOW VALVE AND SYSTEM WERE BEING CHECK ED OUT.							
CORRECTIVE ACTION-1. CIC 12028, WAF741, RELEASED 10/25/61 CHANGED GRAIN DIRECTION OF THE FITTING. CHANGE WAS ON 7- 43426-A, 7-43429-B, 7-43433-D AND 27-47400-AJ. EFFECTIVITY WAS EID 27-0004-23, 28, 29, 31 AND ON, AND EID 27-0008-23 ,25,27 AND ON, AND EID 27-0012-2 AND ON. 2. SITE ACTION PRIOR TO MISSILE RE-INSTALLATION INCLUDED REPLACING BENDOW V ALVE, A FUNCTIONAL AND STRUCTURAL CHECK OF THE STRETCH MECHANISM PLUS REVALUATION PER CHECK LIST 1-13.							
AIRFRAME-A/B BOOSTER-SUSTAINER SEPAR	A-88-06-103 BRACKET-MOUNTING, LATCH MECHANISM	FAR 27-43404-9	1P 620110	SYC.	YES NO	CONVAIR	099501
FAILURE MODE-STRUCTURAL-UNIT REMOVED FOR A CRACK AT THE 27-43417-7 PIN HOLE. THE FAILURE INDICATED EXCESSING LOAD A PPLICATION TO THE RELEASE HOOK ASSEMBLY. IT WAS CONCLUDED THE OVERLOADING WAS INDUCED BY INCORRECT ADJUSTMENT OF THE RELEASE HOOK POSITIONING SCREW.							
CORRECTIVE ACTION-SHOP PERSONNEL INSTRUCTED TO INCREASE SURVEILLANCE DURING LATCH ADJUSTMENT AND INSPECTION.							
AIRFRAME-A/B BOOSTER-SUSTAINER SEPAR	AE61-1802PI-601-00-06.	FLIGHT	6P 611220	11 129	YES YES		
FAILURE MODE-FAIL DURING OPERATION. BOOSTER STAGING PROBLEM. BELIEVED CAUSED WHEN POOLS OF PROPELLANTS COLLECT IN VARIOUS PLACES DURING INITIAL PART OF STAGING AND WERE DETONATED BY SUSTAINER ENGINE FLAREBACK.							

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SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIF DATA SOURCE PART NUMBER	VEHICLE DATE DIF	DATE TIME DIF	PRI OTH	VENDOR NAME VENDOR PART NO
SYSTEM EFFECT-EXPLOSION. HYDRAULIC SYSTEM LEAK BELIEVED CAUSED BY THE MINOR EXPLOSION AT STAGING.						
VEHICLE EFFECT-LOSS OF VEHICLE STABILITY.						
CORRECTIVE ACTION-ADDED FUEL STAGING VALVES TO PREVENT POOLS OF PROPELLANT FROM FORMING.						
AIRFRAME-A/B BOOSTER-SUSTAINER SEPAR	98-06-076 LATCH, BOOSTER RELEASE, PISTON	FAR 27-45408-5	18E 011011	ETR	YES NO	CONVAIR
FAILURE MODE-STRUCTURAL. THE ITEM WAS REMOVED FOR CHIPPED CHROMIUM PISTON PLATING. UNIT FUNCTIONED SATISFACTORILY A LTHOUGH PLATING CHIPS WERE FOUND IN THE O RING SLOT. THIS CONDITION COULD RESULT IN O RING DAMAGE. PLATING WAS FOUND TO BE OF EXCESSIVE THICKNESS. SECOND OCCURRENCE REPORTED ON FAR 98-06-079.						
CORRECTIVE ACTION-SURVEY NO. 80 RELEASED TO CHECK ALL E AND F VEHICLES FOR THIS DISCREPANCY SINCE DATE OF THIS PROB LEM THESE LATCHES ARE PROCURED FROM A VENDOR.						
AIRFRAME-A/B BOOSTER-SUSTAINER SEPAR	9F-02-013 SEPERATION LATCH	FAR 27-45402-801	51E 610731		NO YES	
FAILURE MODE-STRUCTURAL. LATCH FAILED FROM A TENSION LOAD IN EXCESS OF DESIGN VALUE. TEAR OUT WAS AT THE HOLES FOR THE 27-45417-7 PIN. CAUSED BY AN INADVERTANT SIDE LOAD TO THE MISSILE ADAPTER FROM THE BOOM NOSE CLAMP, WHICH WAS OUT OF ADJUSTMENT. A SECONDARY FAILURE CAUSED BY IMPROPER HANDLING.						
CORRECTIVE ACTION-CONFIRMED VISUALLY. A TMX WAS ADDRESSED TO FIELD PERSONNEL REQUESTING UTMOST CAUTION WHILE PERFORMING NOSE CLAMP ADJUSTMENT AND STRICT ADHERENCE TO MISSILE ERECTION PROCEDURE.						
AIRFRAME-A/B BOOSTER-SUSTAINER SEPAR	9D-02-012 SEPERATION LATCH	FAR 7-45423-3	97D 810803	WTR	YES NO	
FAILURE MODE-STRUCTURAL-DISCONNECT FITTING ASSEMBLIES CRACKED UNDER A 15,000 POUND STRETCH LOAD AS SPECIFIED FOR AGENA B MATING. NORMAL ATLAS STRETCH LOAD IS 10,000 POUNDS. CONCLUDED CAUSE WAS POOR ELONGATION PROPERTIES AND RELATIVELY POOR NOTCH SENSITIVITY CHARACTERISTICS AFTER APPLICATION OF A NONSYMMETRICAL STRETCH LOAD.						
CORRECTIVE ACTION-CONFIRMED VISUALLY. MAP 5928, DATED JULY 6, 1961, WAS ISSUED TO INVESTIGATE CAUSE OF FAILURE AND TO DETERMINE WHAT CORRECTIVE ACTION WILL BE TAKEN TO INSURE PROPER FUNCTION OF DISCONNECT ASSEMBLY.						

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SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIP DATA SOURCE PART NUMBER	VEHICLE DATE DIP	SITE TIME DIP	PRI OTH	VENDOR NAME VENDOR PART NO
AIRFRAME-A/B BOOSTER-SUSTAINER SEPAR	AZC-27-077/P4-403-00-10 SEPARATION LATCH	FLIGHT	100 590909	14 136	YES NO	
<p>FAILURE MODE-FAIL TO OPERATE AT PRESCRIBED TIME. POSSIBLE FAILURE OF THE PNEUMATIC SYSTEM IN PROVIDING PRESSURE TO THE CONAX VALVE OF THE BOOSTER SECTION SEPARATION SYSTEM.</p> <p>SYSTEM EFFECT-NONE.</p> <p>VEHICLE EFFECT-IMPROPER TRAJECTORY. THE BOOSTER SECTION DID NOT SEPARATE FROM THE VEHICLE. AS A RESULT OF THE ADDED WEIGHT OF THE BOOSTER SECTION, IMPACT OCCURRED APPROXIMATELY 300 NAUTICAL MILES SHORT OF THE PLANNED RANGE.</p> <p>CORRECTIVE ACTION-THE PRESSURE DOWNSTREAM OF THE CONAX VALVE WILL BE INSTRUMENTED ON FUTURE FLIGHTS.</p>						
AIRFRAME-A/B BOOSTER-SUSTAINER SEPAR	AZC-27-077/P4-403-00-10 CONAX VALVE-BOOSTER SECTION	FLIGHT	100 590909	14 136	YES YES	
<p>FAILURE MODE-FAIL TO OPERATE AT PRESCRIBED TIME. POSSIBLE FAILURE OF THE EXPLOSIVE TYPE CONAX VALVE, PREVENTING PNEUMATIC PRESSURE FROM ACTIVATING THE BOOSTER SECTION SEPARATION FITTINGS.</p> <p>SYSTEM EFFECT-OPERATION DOES NOT START. THE BOOSTER SECTION DID NOT SEPARATE FROM THE VEHICLE.</p> <p>VEHICLE EFFECT-IMPROPER TRAJECTORY. AS A RESULT OF THE ADDED WEIGHT OF THE BOOSTER SECTION, IMPACT OCCURRED APPROXIMATELY 300 NAUTICAL MILES SHORT OF THE PLANNED RANGE.</p> <p>CORRECTIVE ACTION-THE PRESSURE DOWNSTREAM OF THE CONAX VALVE WILL BE INSTRUMENTED ON FUTURE FLIGHTS.</p>						
AIRFRAME-A/B SUSTAINER-PAYLOAD SEPAR	69C4381.1 PYROTECHNIC CONTROL UNIT	UTP-SLT 69-61070-1	690207		YES 60/C 69-61070-1	
<p>FAILURE MODE-DURING PROOF CYCLE AFTER SIX TEMP-ALT- VIBRATION AN INTERMITTENT CONDITION IN CIRCUIT PIN J3A TO GROUND WAS NOTED TAPPING WOULD INCREASE RESISTANCE AND THEN DROP BACK TO 38 TO 60 OHMS. INSPECTION REVEALED BROKEN LEAD AT RELAY R2, TERMINAL 1.</p> <p>CORRECTIVE ACTION-NO DESIGN ACTION TAKEN SINCE THE FAILURE OCCURRED DURING EXTENSIVE HIGH LEVEL VIBRATION WHICH IS NOT REPRESENTATIVE OF THE FLIGHT ENVIRONMENT.</p>						
AIRFRAME-A/B SUSTAINER-PAYLOAD SEPAR	69C4301 PYROTECHNIC CONTROL UNIT	UTP-ETT 69-61070-1	690110		YES 60/C 69-61070-1	
<p>FAILURE MODE-DURING Y AXIS GINE RANDOM VIBRATION INDICATIONS OF CONTACT CLOSURES BETWEEN J2 AND J3D LONGER THAN 10 MICROSECONDS. INTERNAL INSPECTION REVEALED AN EXTRA DOT ON FL28, 1B-1 WHICH HAD BEEN LOOSENED DURING VIBRATION AND WAS SHORTING THE CENTER CONDUCTOR OF FL28 TO ITS OUTER CONDUCTOR.</p>						

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DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIF DATA SOURCE PART NUMBER	VEHICLE DATE DIF	SITE TIME DIF	PRI OTH	VENDOR NAME VENDOR PART NO	
CORRECTIVE ACTION-SURVEY 79-63 WAS PERFORMED ON ALL FLIGHT ARTICLES TO CHECK TORQUE AND TORQUE-PAINT ALL THREADED FASTENERS IN THE ASSEMBLY.							890848
AIRFRAME-A/B SUSTAINER-PAYLOAD SEPAR	89C4381-1 PYROTECHNIC CONTROL UNIT	UTP-ETT 89-61070-1	851105		YES	60/C 89-61070-1	890852
FAILURE MODE-FOUR OUT-OF-TOLERANCE RESISTANCE MEASUREMENTS WERE FOUND AFTER TEMP-ALT-HUMIDITY TEST ONE 120 K OHM RESISTOR WAS FRACTURED LOW INSULATION RESISTANCE DUE TO CONDENSATION LEAKAGE BETWEEN EXPOSED RELAY TERMINALS.							
CORRECTIVE ACTION-QUALITY CONTROL DIRECTED TO TAKE ACTION TO ASSURE THAT FRACTURED RESISTORS ARE DETECTED BY INSPECTION LOW INSULATION RESISTANCE IS NORMAL FOR AN OPEN-WARHESED ASSEMBLY UNDER THESE CONDITIONS.							
AIRFRAME-A/B SUSTAINER-PAYLOAD SEPAR	N2-9D-08-261C SQUIB, ELECTRIC, JETTISON	FAR 89-00900-765	243D 640511	WTR	YES	ORDNANCE ASSOC YES	890809
FAILURE MODE- OUT OF TOLERANCE. THREE SQUIBS HAD A LOW RESISTANCE- 0.025 OHM. ALLOWABLE LIMITS ARE 1.2 TO 1.0 OHMS CAUSE NOT KNOWN. ANALYSIS CANCELLED BY TUX VAN SAN 7-14-110 DATED 640714.							
CORRECTIVE ACTION-FAILURE NOT CONFIRMED. NO CORRECTIVE ACTION TAKEN.							
AIRFRAME-A/B SUSTAINER-PAYLOAD SEPAR	CT-98-08-086P STAGING DISCONNECT LANYARD RELEASE PIN	FAR 27-02130-1	133D 640131	38A/ETR	YES	60/C NO	890168
FAILURE MODE-PREMATURE OPERATION. UNIT REJECTED WHEN DISCONNECT EJECTED WHEN THE SYSTEM WAS PRESSURIZED FROM A GROUND SOURCE. CAUSE OF FAILURE WAS NOT DETERMINED.							
CORRECTIVE ACTION-ETR REQUESTED TO CHECK ITS FLAMMING AND TEST PROCEDURES TO INSURE CAUTION NOTE, CONCERNING POSITION OF THE RELEASE PIN, IS INCORPORATED.							
AIRFRAME-A/B SUSTAINER-PAYLOAD SEPAR	VENDOR OPI RETARDING ROCKET	UTP-PET 27-04300-1	831211	OTHER	YES	ROCKET POWER NO	
FAILURE MODE-FAIL TO OPERATE AT PRESCRIBED TIME. IGNITER FIRED BUT THE ROCKET MOTOR FAILED TO IGNITE. FIRING CONDITIONS WERE -40 DEGREES F AND AT VACUUM CONDITIONS.							
CORRECTIVE ACTION-TCP 8289 DATED 18 MARCH 1964, FOUND THE PROBLEM TO BE UNAUTHORIZED CHANGES IN THE IGNITER DESIGN BY A SUB-CONTRACTOR. A NEW DESIGN WITH A POWER CARTRIDGE (1 AMP/1 WATT) WAS QUALIFIED IN TESTS OF 19 ROCKET MOTORS.							

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DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM	TEST/REPORT NUMBER	DIP DATA SOURCE	VEHICLE	SITE	PRI	VENDOR NAME
SLG-SYSTEM	FAILED COMPONENT NAME	PART NUMBER	DATE DIP	TIME DIP	OTH	VENDOR PART NO
A 27-04300-3 DESIGNATES THE NEW IGNITER.						
AIRFRAME-A/B	A0382-0107/11-401-00-181	FLIGHT	1810	A-3	YES	ATLANTIC REDEA
SUSTAINER-PAYLOAD SEPAR	RETROCKET-IGNITER		921212	297	NO	RCH
FAILURE MODE-FAIL DURING OPERATION. MISSILE ACCELERATION DATA INDICATED CHARACTERISTICS OF CRACKED GRAIN BURNING IN THE RETROCKETS. CRACK COULD RESULT FROM PRESSURE BUILDUP CAUSED BY IGNITERS (TWO IN EACH ROCKET) BEING BLOWN OUT & IDE BY SIDE INSTEAD OF ONE BEHIND THE OTHER.						
SYSTEM EFFECT-ERRATIC OPERATION. CRACK IN THE GRAIN CAUSED UNEVEN BURNING OF SOLID PROPELLANT. NO ADVERSE EFFECT ON SYSTEM OPERATION.						
VEHICLE EFFECT-NONE.						
CORRECTIVE ACTION-UNKNOWN.						
AIRFRAME-A/B	AE62-0103/82-402-00-137	FLIGHT	1370	B2	NO	
SUSTAINER-PAYLOAD SEPAR			820215	304.5	NO	
FAILURE MODE-FAIL TO OPERATE AT PRESCRIBED TIME- A FAILURE OF THE RE-ENTRY VEHICLE UNBILICAL TO EJECT PROPERLY WAS INDICATED BY A 0.4 DEG/SEC DECREASE IN THE MISSILE AIRFRAME ROLL RATE AND A YANKING INDICATION IN THE YAW PLANE. AT 1.11 TO 1.37 SECONDS LATER, IMPULSES IN THE FORM OF SHOCKS TYPICAL OF AIRFRAME BUMPING THE RE-ENTRY VEHICLE WERE RECORDED, INDICATING BOTH VEHICLES WERE ATTACHED.						
SYSTEM EFFECT-NONE.						
VEHICLE EFFECT-LOSS OF VEHICLE STABILITY- VEHICLE ATTITUDE WAS CHANGED.						
CORRECTIVE ACTION-NONE.						
AIRFRAME-A/B	AE60-0937/P3-302-00-13	FLIGHT	132	13	YES	
SUSTAINER-PAYLOAD SEPAR	RETROCKET WIRING CIRCUITRY		610313	339.8	NO	
FAILURE MODE-ELECTRICAL SHORT. DURING RETRO-ROCKET FIRING A SHORT IN THE RETRO-ROCKET WIRING OCCURRED.						
SYSTEM EFFECT-OPERATION TOO LOW. THE 28 VDC MISSILE POWER LEVEL DROPPED 1.0 VOLT AND THE HIGH POWER SWITCH OUTPUTS (NUMBER 16 AND NUMBER 17) DROPPED 16 VOLTS.						
VEHICLE EFFECT-NONE. THE SHORT AND RESULTANT LOW VOLTAGES DID NOT EFFECT THE VEHICLE OR ITS SYSTEM SINCE THE RETRO-ROCKET FIRING IS THE FINAL PROGRAMMER FUNCTION. THE CONDITION DID NOT CONSTITUTE A SERIOUS PROBLEM. SIMILAR DROPOUTS OCCURRED ON VEHICLES 8E AND 8F.						
CORRECTIVE ACTION-TO PRECLUDE SHORTING PROBLEMS AFFECTING HIGH POWER SWITCH FUNCTIONS CURRENT LIMITERS WERE INCORPORATED ON SUBSEQUENT VEHICLES.						

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## DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIF DATA SOURCE PART NUMBER	VEHICLE DATE DIF	SITE TIME DIF	PRI OTH	VEHICLE NAME VEHICLE PART NO	
AIRFRAME-A/B SUSTAINER-PAYLOAD SEPAR	AE80-0858/P3-501-00-09 RETRO-ROCKET WIRING	FLIGHT	9E 810224	13 342.47	YES NO		086130
FAILURE MODE-ELECTRICAL SHORT-DURING RETROCKET FIRING A SHORT OCCURRED. IN THE WIRING CIRCUITRY OF THE RETROCKETS.							
SYSTEM EFFECT-OPERATION TOO LONG-THREE PROGRAMMER SWITCH OUTPUTS DROPPED 80 PERCENT TO 14 VOLTS DUE TO THE WIRING SHORT.							
VEHICLE EFFECT-NONE. THE SWITCH OUTPUTS EFFECTED ARE NOT REQUIRED DURING OR AFTER RETROCKET FIRING. A SIMILAR DRO P OCCURRED ON VEHICLE 8E.							
CORRECTIVE ACTION-ISOLATION PROTECTION ADDED TO LATER VEHICLES.							
AIRFRAME-A/B SUSTAINER-PAYLOAD SEPAR	AC-60-0045/31-508-14-05 SUST. THRUST CHAMBER BOOT	CAPTIVE 27-77011-1	SE 801028	51	YES NO		086979
FAILURE MODE-STRUCTURAL- BOOT INCURRED SIGNIFICANT DAMAGE DURING FIRING.							
SYSTEM EFFECT-NONE- NO EVIDENCE OF A HOT BOATTAIL ENVIRONMENT WAS NOTED IN THE DATA.							
VEHICLE EFFECT-NONE.							
CORRECTIVE ACTION-BOOT WAS IRD AND REPLACED.							
AIRFRAME-A/B SUSTAINER-PAYLOAD SEPAR	AE80-0748/P1-401-00-78 RETROCKET CIRCUITRY	FLIGHT	78D 800818	11 308	YES NO		087788
FAILURE MODE-SHORT (ELECT). SHORT IN THE RETROCKET IGNITER CIRCUITRY OCCURRED DURING RETROCKET FIRING. SIMILAR OCCURRENCES ON VEHICLES 54D AND 86D.							
SYSTEM EFFECT-NONE. NO EFFECT ON SEPARATION BUT SHORT WAS EVIDENCED BY SLIGHT DROPS IN OTHER PROGRAMMER OUTPUTS.							
VEHICLE EFFECT-NONE.							
CORRECTIVE ACTION-BECAUSE OF THIS AND OTHER SIMILAR OCCURRENCES, CURRENT LIMITERS WERE EVENTUALLY ADDED TO PROGRAMMER HIGH POWER SWITCH CIRCUITRY.							
AIRFRAME-A/B SUSTAINER-PAYLOAD SEPAR	AE80-0940/P1-401-00-86 RETROCKET	FLIGHT	86D 900812	11 292.31	YES NO		
FAILURE MODE-ELECTRICAL SHORT. RETROCKET SQUIB WIRING SHORTED TO SHIELD GROUND DURING RETROCKET FIRING.							
SYSTEM EFFECT-NONE. NO DETRIMENTAL EFFECTS TO AIRFRAME.							
VEHICLE EFFECT-NONE. PROGRAMMER CIRCUIT BOARD BURNED OUT AFTER ALL SWITCHING FUNCTIONS HAD BEEN COMPLETED.							

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## DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIF DATA SOURCE PART NUMBER	VEHICLE DATE DIF	SITE TIME DIF	PRI OTH	VENDOR NAME VENDOR PART NO
CORRECTIVE ACTION-CURRENT LIMITERS PLACED IN PYROTECHNIC CIRCUITRY TO PROTECT OTHER ELECTRICAL EQUIPMENT.						
AIRFRAME-A/B SUSTAINER-PAYLOAD SEPAR	AE60-0340/P1-404-00-06 LATCH-SEPARATION	FLIGHT	66D 600812	11 80	YES NO	60 CONVAIR
FAILURE MODE-FAIL DURING OPERATION. R/V SEPARATION LATCHES, ORIGINALLY DESIGNED FOR THE MK11 WARHEAD, ALLOWED TOO MUCH LATERAL MOVEMENT OF THE RVX-2A RELATIVE TO THE ADAPTER. NON-LINEAR PIVOTING OF THE R/V MASS SET UP EXCESSIVE BENDING MODE OSCILLATIONS WHICH CEASED ABRUPTLY AT 112.5 SECONDS WHEN QUAD IV LATCH IS BELIEVED TO HAVE YIELDED.						
SYSTEM EFFECT-NONE. EXCESSIVE BENDING MODE OSCILLATIONS OBSERVED BEGINNING AT 80 SECONDS AND CEASING AT 112.5 SECONDS HAD NO DETRIMENTAL EFFECTS ON AIRFRAME EXCEPT YIELDING OF QUAD IV LATCH.						
VEHICLE EFFECT-NONE MISSION SUCCESSFULLY COMPLETED INCLUDING SATISFACTORY R/V SEPARATION BY PROGRAMMER COMMAND.						
CORRECTIVE ACTION-DESIGN TOLERANCES FOR LATCHES TIGHTENED TO CAUSE CONSTANT-COMPRESSION CONFIGURATION.						
AIRFRAME-A/B SUSTAINER-PAYLOAD SEPAR	AE60-0318/B2-403-00-25 RETROCKET	FLIGHT	23D 600422	D-2 319.93	YES NO	
FAILURE MODE-OUT OF TOLERANCE. DEFLECTION OF THE RETROCKET THRUST VECTOR DUE TO EXPANSION OF THE EXHAUST GASES AGAINST THE TANK SURFACE.						
SYSTEM EFFECT-NONE.						
VEHICLE EFFECT-LOSS OF VEHICLE STABILITY. THE DEFLECTED THRUST VECTOR RESULTED IN A MISSILE NOSE DOWN MOVEMENT AND SUBSEQUENT COLLISION OF THE TANK SECTION ADAPTER WITH THE RE-ENTRY VEHICLE.						
CORRECTIVE ACTION-RETROCKET INSTALLATION MODIFIED TO INCLUDE A DUCT OVER THE RETROCKET NOZZLE EXTENDING BEYOND THE POD NOSE FAIRING TO POSITIVELY MAINTAIN THE DESIRED THRUST VECTOR.						
AIRFRAME-A/B SUSTAINER-PAYLOAD SEPAR	A7C-E7-054/P3-403-00-14 RETROCKET	FLIGHT	14D 590911	13 319.72	YES NO	
FAILURE MODE-OUT OF TOLERANCE. DEFLECTION OF THE RETROCKET THRUST VECTOR DUE TO THE EXPANSION OF EXHAUST GASES AGAINST THE TANK SURFACE.						
SYSTEM EFFECT-NONE.						
VEHICLE EFFECT-LOSS OF VEHICLE STABILITY. THE DEFLECTED THRUST VECTOR RESULTED IN A MISSILE NOSE DOWN PITCH RATE OF 1.6 DEGREES PER SECOND, AND SUBSEQUENT COLLISION OF THE TANK SECTION ADAPTER WITH THE RE-ENTRY VEHICLE.						
CORRECTIVE ACTION-RETROCKET INSTALLATION MODIFIED TO INCLUDE A DUCT OVER THE RETROCKET NOZZLE EXTENDING BEYOND THE POD NOSE FAIRING TO POSITIVELY MAINTAIN THE DESIRED THRUST VECTOR.						

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CONVAIR DIVISION

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DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIF DATA SOURCE PART NUMBER	VEHICLE DATE DIF	SITE TIME DIF	PRI OTH	VENDOR NAME PART NO
AIRFRAME-A/B SUSTAINER-PAYLOAD SEPAR	AZC-27-084/AR-402-00-12 RETROCKET	FLIGHT	12D 590909	A2 302.9	YES NO	
<p>FAILURE MODE-OUT OF TOLERANCE. RETROCKET THRUST VECTOR DEFLECTED DUE TO EXPANSION OF THE EXHAUST GASES AGAINST THE TANK SURFACE.</p> <p>SYSTEM EFFECT-NONE.</p> <p>VEHICLE EFFECT-LOSS OF VEHICLE STABILITY. THE DEFLECTED THRUST VECTOR RESULTED IN A MISSILE NOSE DOWN PITCH RATE OF APPROXIMATELY 1.5 DEGREES PER SECOND, AND SUBSEQUENT COLLISION OF THE TANK SECTION ADAPTER WITH THE RE-ENTRY VEHICLE.</p> <p>CORRECTIVE ACTION-RETROCKET INSTALLATION MODIFIED TO INCLUDE A DUCT OVER THE RETROCKET NOZZLE EXTENDING BEYOND THE POD NOSE FAIRING TO POSITIVELY MAINTAIN THE DESIGN THRUST VECTOR.</p>						
AIRFRAME-A/B SUSTAINER-PAYLOAD SEPAR	AZC-27-033/P1-404-00-11 RETROCKET	FLIGHT	11D 590726	11 315.8	YES NO	
<p>FAILURE MODE-FAIL TO OPERATE AT PRESCRIBED TIME. ACCELERATION DATA INDICATED THAT ONLY ONE OF THE TWO RETROCKETS FIRED.</p> <p>SYSTEM EFFECT-OPERATION TOO LOW. INSTEAD OF NOMINAL IMPULSE OF 790 LB-SEC, ONLY 400 LB SEC IMPULSE WAS INDICATED.</p> <p>VEHICLE EFFECT-NONE. MAY HAVE CONTRIBUTED TO BUMPING OF RE-ENTRY VEHICLE AFTER SEPARATION. RE-ENTRY VEHICLE IMPACT WAS SATISFACTORY.</p> <p>CORRECTIVE ACTION-UNKNOWN.</p>						
AIRFRAME-A/B PAYLOAD FAIRING-OAO	SLV-9B-02-082 RETROFORCE TUBE	FAR 69-20004-1	680222	CX12	60/C	
<p>FAILURE MODE-STRUCTURAL. CRACK IN B-NUT SLEEVE IN THE OAO RETROFORCE TUBE. COMPONENT FOUND IN THE OAO FAIRING.</p> <p>CORRECTIVE ACTION-FAILURE CONFIRMED. STAINLESS STEEL 303 MATERIAL WILL NOT BE USED FOR SLEEVES. 60/C SPECIFICATION 69-82049 WAS CREATED TO CONTROL FABRICATION OF RIDGED TUBING AND TORQUING OF B-NUTS.</p>						
AIRFRAME-A/B PAYLOAD FAIRING-OAO	69C4938.1 PYROTECHNIC CONTROL UNIT OAO	UTP-FTP 69-81120-5	680218		YES 60/C 69-81120-5	
<p>FAILURE MODE-FOUR UNITS OPENED FOR INTERNAL INSPECTION FOLLOWING FLIGHT VIBRATION TEST. LOOSE NUT FOUND ON PIN L TB 1 OF 2 UNITS.</p> <p>SYSTEM EFFECT-NONE</p>						

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# DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIP DATA SOURCE PART NUMBER	VEHICLE DATE DIP	SITE TIME DIP	PRI OTH	VENDOR NAME VENDOR PART NO
VEHICLE EFFECT-NONE						
CORRECTIVE ACTION-NUTS TORQUED IN ACCORDANCE WITH SPEC D-70038 ASSEMBLY DRAWINGS CORRECTED TO CALL OUT TORQUE REQUIREMENTS.						
AIRFRAME-A/B PAYLOAD FAIRING-OAO	69A 3964 EXPLOSIVE NUT POWER CARTRIDGE	UTP-QUAL/PPT 27-02987-9	650609	60/C	YES HI SHEAR NO PCI1	891799
FAILURE MODE-CONTAMINATION. THE RECOIL OF THE NUT ASSEMBLY SHEARED OFF THE POWER CARTRIDGE LOCKING PINS. SECONDARY FAILURE AFTER CORRECT OPERATION OF THE EXPLOSIVE NUT.						
CORRECTIVE ACTION-ECP 3210, DATED 16 NOV 1985, WILL DEVELOP AND QUALIFY A FLEXIBLE BO-IT CAPABLE OF CONTAINING ANY CONNECTOR LOCK PINS.						
AIRFRAME-A/B PAYLOAD FAIRING-OAO	69A2009-2 ONE-WAY VENT VALVE	UTP-QUAL/PPT 69-08101-1	650120	60/C	YES RAYMOND W. JEN NO SEN 200200	891104
FAILURE MODE - ERRATIC OPERATION. DURING THE TEMPERATURE-HUMIDITY TEST THE UNITS DUMP FLAPPER UNLATCHED AS IT WAS BEING HEATED. LATER WHEN REQUIRED TO UNLATCH IT WOULD NOT. THE LATCHING MECHANISM HAD BEEN ERRATIC THROUGHOUT THE TEST. REF. TASK HISTORY LOG NO. 665-1-0006.						
CORRECTIVE ACTION-TERMINATE TESTING, SEND UNIT BACK TO VENDOR. IT HAS BEEN DETERMINED BY ANALYTICAL AND TECHNICAL EVALUATION THAT THE SPECIFICATION REQUIREMENTS FOR LEAKAGE AND DUMP OPEN TIME ARE TOO RIGID. THEREFORE REVISION TO THE SPECIFICATION REQUIREMENTS FOR MORE REALISTIC VALUES IS NECESSARY.						
AIRFRAME-A/B PAYLOAD FAIRING-OAO	69A2009-2 ONE-WAY VENT VALVE	UTP-QUAL/PPT 69-08101-1	650113	60/C	YES RAYMOND W. JEN NO SEN 200200	891103
FAILURE MODE-ERRATIC OPERATION. DURING PROOF CYCLE A AND B THE UNITS DUMP FLAPPER OPERATED IN AN ERRATIC MANNER BY RELEASING AND RELOCKING IN A NON-REPEATABLE MANNER, TIME WISE. ALSO THE LEAKAGE WAS AT ONE TIME EXCEEDING SPECIFICATION AND THE NEXT TIME WAS IN SPECIFICATION. THREE UNITS REACTED IN THE SAME MANNER REF. TASK HISTORY LOG NO. 665-1-0006.						
CORRECTIVE ACTION-NO FURTHER TESTS TO BE CONDUCTED ON THE ABOVE UNITS.						

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DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIF DATA SOURCE PART NUMBER	VEHICLE DATE DIF	SITE TIME DIF	PRI OTH	VENDOR NAME VENDOR PART NO
AIRFRAME-A/B PAYLOAD FAIRING-OAO	69A2009 ONE-WAY VENT VALVE	UTP-QUAL/PPT 69-08101-1	690111	60/C	YES NO	RAYMOND W. JEN SEN 200200
FAILURE MODE-OUT OF TOLERANCE. DURING PROOF CYCLE B OF THE INITIAL ACCEPTANCE TEST THE UNIT DUMP FLAPPER EXCEEDED THE REQUIRED TIME OF 8 TO 12 SEC. REF. TASK HISTORY LOG NO. 663-1-003.						
CORRECTIVE ACTION-CONTINUE TEST.						
AIRFRAME-A/B PAYLOAD FAIRING-OAO	69A2009 ONE-WAY VENT VALVE	UTP-QUAL/PPT 69-08101-1	690109	60/C	YES NO	RAYMOND W. JEN SEN 200200
FAILURE MODE-ERRATIC OPERATION. DURING INITIAL ACCEPTANCE TEST THE UNIT DUMP FLAPPER LATCHING MECHANISM OPERATED F AULTY, SOMETIMES LATCHING AND OTHER TIMES NOT LATCHING. REF. TASK HISTORY LOG NO. 663-1-004.						
CORRECTIVE ACTION-CONTINUE TEST.						
AIRFRAME-A/B PAYLOAD FAIRING-OAO	69A2009 ONE-WAY VENT VALVE	UTP-QUAL/PPT 69-08101-1	690108	60/C	YES NO	RAYMOND W. JEN SEN 200200
FAILURE MODE-LEAK-EXTERNAL. DURING PROOF CYCLE J OF THE INITIAL ACCEPTANCE TEST THE UNIT LEAKED STOSCIN WITH A DIFFERENTIAL PRESSURE OF 0.3PSID. MAXIMUM ALLOWABLE IS 150 SCIN. REF. TASK HISTORY LOG NO. 663-1-005.						
CORRECTIVE ACTION-CONTINUE TEST.						
AIRFRAME-A/B PAYLOAD FAIRING-OAO	69A2009 ONE-WAY VENT VALVE	UTP-QUAL/PPT 69-08101-1	641230	60/C	YES NO	RAYMOND W. JEN SEN 200200
FAILURE MODE-OUT OF TOLERANCE. DURING EXAMINATION OF PRODUCT THE UNITS MOUNTING HOLES TO EDGE OF FLANGE WAS 0.25 INCHES. REQUIRED IS 0.34 INCHES. REF. TASK HISTORY LOG NO. 663-1-001.						
CORRECTIVE ACTION-OCR 27495 WILL BE INITIATED TO REVISE NOTE 1.2 OF SPECIFICATION CONTROL DRAWING 69-08101.						
AIRFRAME-A/B PAYLOAD FAIRING-OAO	69A2009 ONE-WAY VENT VALVE	UTP-QUAL/PPT 69-08101-1	641028	60/C	YES NO	RAYMOND W. JEN SEN 200200
FAILURE MODE-OUT OF TOLERANCE. DURING INITIAL DUMP FLAPPER TEST THE FLAPPER OPERATION TIME EXCEEDED THE ALLOWABLE 10 TO 12 SECONDS AT THE 0.8 PSID PRESSURE. FIVE UNITS WERE TESTED, REJECTED, AND RETURNED TO THE VENDOR FOR RE-ADJUST						

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## DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIF DATA SOURCE PART NUMBER	VEHICLE DATE DIF	SITE TIME DIF	PRI OTH	VENDOR NAME VENDOR PART NO
MENT AND POSSIBLE RE-DESIGN OF THE LATCH MECHANISM. REF. FPR NR P-309087. 001097						
CORRECTIVE ACTION-VENDOR MADE THE FOLLOWING DESIGN CHANGES TO THE VALVE (A) LATCH MECHANISM WAS CHROME HARDENED (B) AN EPOXY CEMENT WAS ADDED TO THE ADJUSTMENT SCREWS TO PREVENT SLIPPAGE. REF. FPR FR 454-S-417.						
AIRFRAME-A/B PAYLOAD FAIRING-OAO	69A2009 ONE-WAY VENT VALVE	UTP-QUAL/PPT 69-08101-1	641021	60/C	YES NO	RAYMOND W. JEN SEN 200200
FAILURE MODE-OUT OF TOLERANCE. DURING INITIAL ACCEPTANCE TEST DUMP FLAPPER TEST THE UNITS FLAPPER OPENED AND LATCHED IN 17.8 SECONDS. REQUIRED OPERATION IS 8 TO 12 SEC. DURING PROOF CYCLE A LEAKAGE AT 0.3PSID WAS 330 SCIN. MAXIMUM ALLOWABLE IS 150 SCIN.						
CORRECTIVE ACTION-RETURN UNIT TO VENDOR FOR REMOK. 001098						
AIRFRAME-A/B PAYLOAD FAIRING-OAO	69A2009 ONE-WAY VENT VALVE	UTP-QUAL/PPT 69-08101-1	641016	60/C	YES NO	RAYMOND W. JEN SEN 200200
FAILURE MODE-OUT OF TOLERANCE. DURING THE INITIAL ACCEPTANCE DUMP TEST THE UNITS DUMP FLAPPER OPERATION EXCEEDED THE REQUIRED 8 TO 12 SECONDS ALLOWABLE. SIX UNITS WERE TESTED.						
CORRECTIVE ACTION-REJECT UNITS AND RETURN TO THE VENDOR FOR RE-ADJUSTMENT. 001099						
AIRFRAME-A/B PAYLOAD FAIRING-OAO	69A2009 ONE-WAY VENT VALVE	UTP-QUAL/PPT 69-08101-1	641014	60/C	YES NO	RAYMOND W. JEN SEN 200200
FAILURE MODE-OUT OF TOLERANCE. DURING THE REPEAT I.A.T DUMP TEST FOR THE VENDORS REPRESENTATIVE THE FOUR UNITS DUMP OUT OF TOLERANCE CONDITIONS WERE CONFIRMED.						
CORRECTIVE ACTION-RETURN ALL UNITS TO THE VENDOR FOR REMOK. 001094						
AIRFRAME-A/B PAYLOAD FAIRING-OAO	69A2009 ONE-WAY VENT VALVE	UTP-QUAL/PPT 69-08101-1	641002	60/C	YES NO	RAYMOND W. JEN SEN 200200
FAILURE MODE-LEAK-EXTERNAL. DURING THE INITIAL ACCEPTANCE TEST AT A NEGATIVE DIFFERENTIAL PRESSURE OF 0.3PSID THE LEAKAGE WAS 300 SCIN. ALLOWABLE IS 150 SCIN. MAXIMUM. REF. S/N 404-0003.						

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DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIP DATA SOURCE PART NUMBER	VEHICLE DATE DIP	TIME DIP	PRI OTH	VENDOR NAME VENDOR PART NO
CORRECTIVE ACTION-THE VALVE WAS OPENED AND RELATCHED. THE UNIT RETESTED. THE LEAKAGE WAS 100 SCIM. THE TEST WAS CONTINUED.						
AIRFRAME-A/B PAYLOAD FAIRING-OAO	SLV-PL-08-3207F THRUSTER CRUSH PAD-OAO NOSE	FAR 55-71038-1	840825	POINT LO MA	YES YES	GO-FORTWORTH 55-71038-1
FAILURE MODE-STRUCTURAL. DAMAGE OCCURRED. THRUSTER ARM CRUSH PAD SEPARATED FROM ITS BASE AND FELL FROM ITS MOUNT. CAUSED BY PROJECTILE LIKE ACTION OF HALF OF BROKEN ARM.						
CORRECTIVE ACTION-PER FAR SLV-PL-08-3796 THE DESIGN GROUP STUDIED THE PROBLEM. THE CUSTOMER AUTHORIZED EXISTING DESIGN WITH A SPRING CYLINDER TYPE. REFERENCE SALES ORDER 384-1-61 DATED 641203. NO ACTION WILL BE TAKEN ON THE CRUSH PAD FAILURE.						
AIRFRAME-A/B PAYLOAD FAIRING-OAO	SLV-PL-08-3206F THRUSTER ARM ASSEMBLY-OAO NOSE	FAR 55-71030-11	840825	POINT LO MA	YES NO	GO-FORT WORTH 55-7103-11
FAILURE MODE-STRUCTURAL. DAMAGE OCCURRED. THRUSTER ARM BROKE INTO TWO PIECES FROM SUDDEN LOADING OF THE ARM AT NORMAL JETTISONING. THE ARM EXPLOSIVE LATCH PIN AND THE PISTON WERE GOUNDED AND SAFETY PIN HOLE WAS FLATTENED DUE TO SUDDEN IMPACT OF ARM AND PISTON UPON SUDDEN ARM DECELERATION.						
CORRECTIVE ACTION-PER FAR SLV-PL-08-3796 THE DESIGN GROUP STUDIED THE PROBLEM. THE CUSTOMER AUTHORIZED DEVELOPMENT OF A SPRING CYLINDER TYPE JETTISON SYSTEM TO REPLACE EXISTING DESIGN. REFERENCE SALES ORDER 384-1-61 DATED 641203. NO ACTION WILL BE TAKEN ON FAILURES OF THE ORIGINAL DESIGN.						
AIRFRAME-A/B PAYLOAD FAIRING-OAO	SLV-08-02-031F NOSE CONE FAIRING SEPARATION NUT & BUSHING	FAR 55-02992-9	840730	FACTORY	YES NO	HI-SHEAR PC-11
FAILURE MODE-INTERNAL LEAK. EXPLOSIVE GASES LEAKED BACK THROUGH CRACKS IN THE CERAMIC HEADER PRESSURE SEAL DURING PPT TEST FIRING.						
CORRECTIVE ACTION-VENDOR INCORPORATED TWO DESIGN CHANGES CONCERNING THE CERAMIC HEADER'S. CHANGE FROM EPONY TO BOLD ER FASTENING AND CHANGE IN SHAPE OF RETAINING RING.						
AIRFRAME-A/B PAYLOAD FAIRING-OAO	59A2008 ONE-WAY VENT VALVE	UTP-QUAL/PPT 60-08101-1	840811	GO/C	YES NO	RAYMOND M. JEN BEN INC. 500200
FAILURE MODE-LEAK-EXTERNAL. DURING THE INITIAL ACCEPTANCE TEST AT A NEGATIVE DIFFERENTIAL PRESSURE OF 0.3 PSID THE TEST UNITS LEAKAGE RATE EXCEEDED THE 2480 CC/MIN. ALLOWED FOUR UNITS WERE TESTED.						

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DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIF DATA SOURCE PART NUMBER	VEHICLE DATE DIF	SITE TIME DIF	PRI OTH	VENDOR NAME VENDOR PART NO
CORRECTIVE ACTION-THE UNITS WERE RETURNED TO THE VENDOR FOR REWORK. RE-ACCEPTANCE TO BE UPON SATISFACTORY PERFORMANCE OF THE FAILED TEST ONLY.						
AIRFRAME-A/B PAYLOAD FAIRING-QAO	3LV-99-02-048F NOSE CONE FAIRING SQUID, SEPARATIO 27-08952-9 N NUT	FAR	640603	FACTORY	NO	HI-SHEAR NO PC-11
FAILURE MODE-STRUCTURAL - FAULTY METAL BUSHINGS IN THE TEST FIXTURE ALLOWED SEPARATION NUT TO RELEASE VIOLENTLY, SHOCKING THE RETAINING PINS IN THE SQUID AND FORCING OFF THE ELECTRICAL PLUG.						
CORRECTIVE ACTION-INCORRECT TEST FIXTURE COMPONENTS WERE REPLACED WITH PROPER PARTS.						
AIRFRAME-A/B PAYLOAD FAIRING-QAO	89F-2611-1A EXPLOSIVE NUT	UTP-QUAL/PPT 27-08952-7	640509	GO/C	YES	HI-SHEAR NO 848310
FAILURE MODE-FAIL TO OPERATE AT PRESCRIBED TIME. POWER CARTRIDGE FIRED BUT NUT SEGMENTS WOULD BIND AFTER IMPACT INTO STIMULATED FITTING BUSHINGS AND WOULD NOT ALLOW BOLT TO SEPARATE.						
CORRECTIVE ACTION-THE COMPRESSIVE STRENGTH WAS INCREASED FOR THE FLIGHT BUSHINGS. THE NEW BUSHINGS WERE USED TO TEST SEVEN NUT ASSEMBLIES. THE BOLTS WERE EJECTED WITH NO DAMAGE TO THE BUSHING.						
AIRFRAME-A/B PAYLOAD FAIRING-QAO	SP-99-02-048C VENT VALVE	FAR 69-08101-1	630909	PT. LOMA	YES	JENSON NO 200200
FAILURE MODE-PREATURE OPERATION-VALVE OPENED TO SOON. NO ANALYSIS WAS MADE.						
CORRECTIVE ACTION-NONE-VALVE WAS NOT RECEIVED FOR ANALYSIS.						
AIRFRAME-A/B PAYLOAD FAIRING-QAO	CT-98-02-002F EXPLOSIVE BOLT, NOSE FAIRING	FAR NONE	620412	30	YES	MCCORMICK HELP NO M D3800
FAILURE MODE-STRUCTURAL. TWO 4340 STEEL EXPLOSIVE BOLTS WERE FOUND BROKEN, 1 DAY APART, DUE TO EXCESSIVE VENDOR HEAT TREAT WHICH ALLOWED BREAKAGE FOLLOWING INSTALLATION TORQUE. BOTH BOLTS WERE HEAT TREATED WITHIN THE BRITTLE RANGE OF 220,000 TO 260,000 PSI. REQUIRED INSTALLATION TORQUE WAS 400 INCH-POUNDS.						
CORRECTIVE ACTION-1. 60/C REDUCED TORQUE REQUIREMENT FROM 400 TO 250 INCH-POUNDS, AND ADDED A SPHERICAL WADDER TO BOLT INSTALLATION TO TAKE OUT ANY POSSIBLE SIDE LOADS. 2. VENDOR REQUESTED FROM 60/C A LIST OF APPROVED HEAT TREAT SCHEDULES FROM WHICH ONE WILL BE USED. 3. VENDOR WILL SUBMIT CERTIFICATION OF ULTRASONIC INSPECTION, HEAT TREATING AND						



GENERAL DYNAMICS  
CONVAIR DIVISION

15 JUN 1966

DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIP DATA SOURCE PART NUMBER	VEHICLE DATE DIP	SITE TIME DIP	PRI OTM	VENDOR NAME VENDOR PART NO
<p>MAGNETIC PARTICLE INSPECTION AS WELL AS RECORDS OF 100 PER CENT ROCKWELL HARDNESS TESTS TO 60/C. 4. VENDOR WILL SUBM IT FOR TEST TO AN INDEPENDENT LABORATORY ONE BOLT FROM EACH PRODUCTION LOT FOR FULL TESTING. RESULTS WILL BE FORWARDED TO 60/C.</p>						
AIRFRAME-A/B PAYLOAD FIRING-OAO	69A2009 ONE-WAY VENT VALVE	UTP-QUAL/PPT 27-08101-1	19650108 60/C	YES RAYMOND W. JEN NO SEN	800200	899311
<p>FAILURE MODE-ERRATIC OPERATION. DURING PROOF CYCLE 8 OF THE INITIAL ACCEPTANCE TEST, THE UNITS DUMP FLAPPER DID NOT OPEN FOR 3 ATTEMPTS AND DURING THE NEXT 4 ATTEMPTS ITS TIME EXCEEDED THE ALLOWABLE OF 8 TO 12 SEC. ACTUAL TIMES VARIED BETWEEN 13.8 TO 21.2 SEC. ALSO THE DUMP FLAPPER WENT PAST BOTH LATCHES. REF. TASK HISTORY LOG NO. 663-1-003.</p>						
<p>CORRECTIVE ACTION-CONTINUE TEST.</p>						

GENERAL DYNAMICS  
CONVAIR DIVISION

19 JUN 1966

DIFFICULTIES REVIEW-AIRFRAME SYSTEM-AIRBORNE

SYSTEM SUB-SYSTEM	TEST/REPORT NUMBER FAILED COMPONENT NAME	DIP DATA SOURCE PART NUMBER	VEHICLE		SITE		PRI		VENDOR NAME	
			DATE	DIP	TIME	DIP	OTH	OTH	VENDOR	PART NO